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VOLUME XVI
NUMBER 2
OCTOBER 1950

PUBLISHED BY THE SOCIETY
FOR AMERICAN ARCHAEOLOGY

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American Antiquity is printed by the University of Utah Press, University of Utah, Salt Lake City 1, Utah.

Published by the SOCIETY FOR AMERICAN ARCHAEOLOGY during the months of January, April, July, and October. Subscription by membership; annual dues of $6.00 includes quarterly issues of *American Antiquity* and other releases, as issued.

Entered as second-class matter July 22, 1935, at the post office at Menasha, Wisconsin, under the Act of March 3, 1879. Application for re-entry as second-class matter made October 5, 1950, at the post office at Salt Lake City, Utah, is pending.

Proposed articles and contributions to "Facts and Comments" should be submitted to the Editor, Jesse D. Jennings; publications for review, reviews, and material for "Notes and News," to the Associate Editor, Erik K. Reed.

Subscriptions and orders for back issues or *Memoirs* should be addressed to the Treasurer, Glenn A. Black.

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AMERICAN ANTIQUITY

VOL. XVI OCTOBER, 1950 No. 2

CULTURAL UNITY AND DISUNITY IN THE TITICACA BASIN

WENDELL C. BENNETT

IN pre-Columbian Peru, conditions favorable for population concentration and cultural development were largely restricted to the coastal valleys and the high structural basins in the mountains. Most archaeologists who have dealt with comparative chronology have grouped adjacent valleys and compared their combined cultural sequences with those of a highland basin. The justification for this procedure has been the assumption that cultural uniformity would be found throughout these regional units in any given time period. For the valleys, such an assumption is based on the limited size of the area and the fact that each has only one major source of water supply to support an economy based on irrigated agriculture. The intensive archaeological work in Viru by the Institute of Andean Research verified the thesis of cultural uniformity for one valley. The situation in the highlands is, however, somewhat different since the basins are comparatively large, have many sources of water supply, and allow economies not totally dependent on irrigation. Only one highland basin, the Lake Titicaca, is sufficiently known archaeologically to allow examination of distributions at different time periods as a basis for evaluating its cultural unity or disunity. The present paper undertakes such a review.

The altiplano between Peru and Bolivia is a structural basin some five hundred miles in extent, over 12,500 feet in altitude, and flanked by mountain ranges. Within it, however, the terrain most suitable for effective habitation is largely limited to the environs of Lake Titicaca, or an area some two hundred by sixty miles, including the lake. This is a region long occupied by the Aymara Indians and one in which considerable archaeological investigation has been conducted. The boundary between Peru and Bolivia cuts through the lake, leaving roughly two-thirds of the area on the Peruvian side, here called the North Titicaca Basin, although strictly speaking it should be the Northwest.

For convenience in discussing distributions, the Titicaca Basin is dealt with in terms of seven sub-areas, as indicated on the accompanying map (Fig. 34). The Tiahuanaco subarea includes the region roughly south of the lake. Copacabana refers to the peninsula of that name, the islands in the Bolivian section of the lake, and the islands of Titicaca and Coati. The Achacache sub-area covers the southeastern shore of the lake up to the Peruvian border. Moho is the northeastern, Taraco the northern, Puno the northwestern, and Juli the southwestern section of the lake shore.

The cultural sequences as now known for the North and South Titicaca Basin are presented in the accompanying chart (Fig. 35). The distribution of sites for the major early and late periods in the North Titicaca Basin has been covered by the surveys of Kidder (1943) and Tschopik (1946). Both reports include site distribution maps covering the subareas here designated as Moho, Taraco, Puno and Juli. Before discussing the problem of the Basin as a whole, a review is needed of the remaining sub-areas, Copacabana, Tiahuanaco, and Achacache, all in the South Titicaca Basin.

SOUTH TITICACA BASIN DISTRIBUTION

The distributions follow the order of the major archaeological periods in early to late chronological order. No attempt is made here to define these periods, nor to give any elaborate descriptions of the sites, since in most cases this has been adequately covered in the published literature which will be cited. The principal sources are: Bandelier (1910), Bennett (1933, 1934, 1936), Casanova (1942),

Posnansky (1945), Rydén (1947), Squier (1877), and Uhle (1912). The published literature has occasionally been supplemented from the author's unpublished field notes and from the Bandelier collection and field notes in the American Museum of Natural History. The site numbers refer to the map locations given in Figure 34.

Chiripa

The Chiripa period is well isolated at the type site (No. 14), on the shore of Lake Titicaca (Bennett, 1936). The evidence for placing Chiripa as the earliest period yet known in the South Titicaca Basin is presented elsewhere (Bennett, 1948), but needs field confirmation badly. The Chiripa circular village plan with double-walled houses and elaborate bone inventory has never been reported from other sites. The ceramic complex, particularly the distinctive Chiripa Yellow-on-Red type has, however, been found at a few sites.

No. 1, Tiahuanaco. A single fragment of Chiripa Yellow-on-Red was found in an early Classic Tiahuanaco level.

No. 13, Llogheta. A surface fragment of Chiripa Yellow-on-Red was found at this site near La Paz.

No. 17, Pajchiri. Again a fragment of Chiripa Yellow-on-Red was found on the surface.

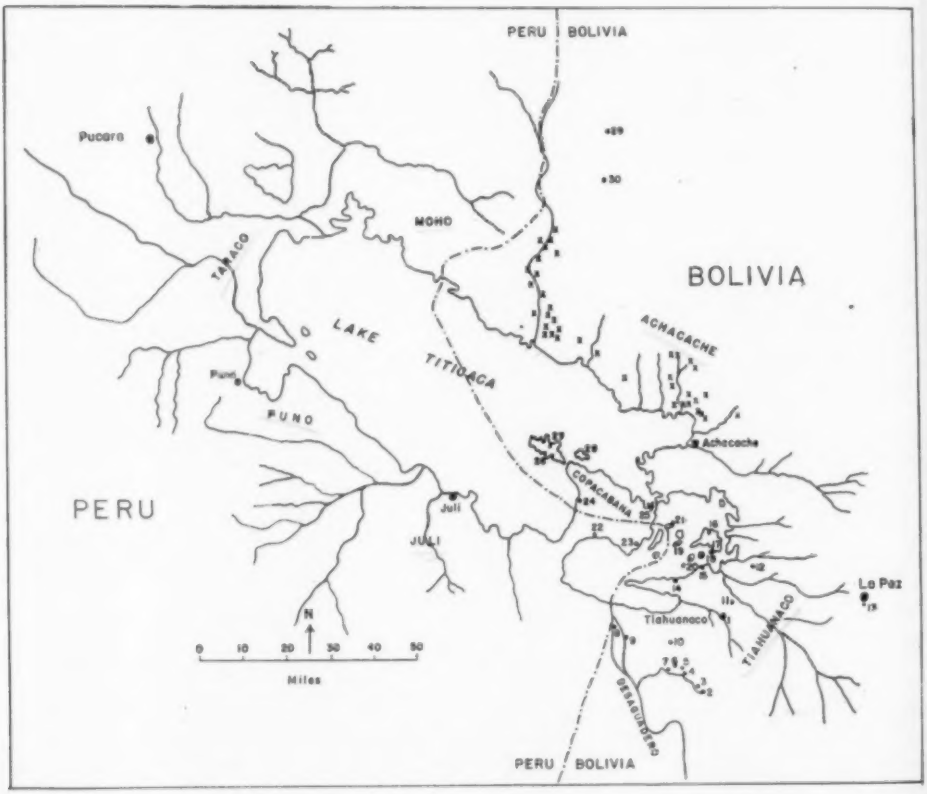

Fig. 34. Location of Sites in South Titicaca Basin. *1*, Tiahuanaco. *2*, Wancani. *3*, Khonkho, *4*, Sollkatiti. *5*, Palli Marca. *6*, Cchaucha del Kjula Marca. *7*, Kala Sayani. *8* Simillake. *9*, Iru-Itu. *10*, Quenachata. *11*, Achuta. *12*, Pucarani. *13*, Llogheta. *14*, Chiripa. *15*, Lucurmata. *16*, Cumana. *17*, Pajchiri. *18*, Quehuaya. *19*, Intja. *20*, Pariti. *21*, Taquiri. *22*, Mocachi. *23*, Chocupercas. *24*, Copacabana. *25*, Tiquina. *26*, Titicaca. *27*, Kea Kollo Chico. *28*, Coati. *29*, Pelechuco. 30, Charassani. *xxx*, Achacache villages.

No. 20, Pariti. Several pits encountered a refuse layer containing Chiripa ceramics and other artifacts, unmixed with other styles. The excavation evidence suggests a time position as pre-Classic and pre-Decadent Tiahuanaco (Bennett, 1936, 1948).

No. 24, Copacabana. Bandelier purchased a vessel of Chiripa Yellow-on-Red style from this peninsula.

The Chiripa distribution is thus limited to two sub-areas and properly speaking, can be said to be found at only two sites.

The Chiripa culture seems unrelated to anything else in the South Titicaca Basin. It is particularly devoid of any affiliation with the Tiahuanaco sequence.

Both Kidder (1948), and Bennett (1948) have pointed out the basic resemblance of the Chiripa ceramic complex with that of Pucara in the North Titicaca Basin. These resemblances, while doubtless significant, are not of sufficient magnitude to suggest that Pucara developed out of Chiripa nor that Chiripa is a South Titicaca branch of Pucara. Likewise, the appliqué relief animals on Chiripa ceramics, as well as certain other features, show a slight resemblance to the pre-Inca Chanapata ceramics found by Rowe (1944) at Cuzco. With all this, however, Chiripa remains a limited cultural manifestation of somewhat marked distinctiveness at two sites in Bolivia.

EARLY TIAHUANACO

Early Tiahuanaco is so named because it was first isolated at that site (No. *1*) in levels 5-6 of pit 8, and levels 6-9 of pit 5 of the Bennett (1934) excavations. It needs renaming badly, since stylistically it shows little resemblance to the better known Tiahuanaco styles. Still one hesitates to start renaming in a report based almost exclusively on published literature. At Tiahuanaco, then, the Early Tiahuanaco was not only stratigraphically older than the Classic, but in some levels, unmixed with it.

Over ninety per cent of the sherds in the Early Tiahuanaco levels are plain wares. There are two distinctive painted wares, a Red-on-Buff and a Polychrome-on-Buff. Vessels of the second ware are spittoon-like bowls, decanters, and simple libation bowls with designs of peculiar animals, birds, and interlocking figures, painted in polychrome colors, which have a burnished finish. The design area is often limned with black, which suggests to Jijón y Caamaño (1949) an imitation of the three-color negative painting of Recuay. Early Tiahuanaco distribution is traced by this Polychrome-on-Buff style.

No. 14, Chiripa. Early Tiahuanaco Polychrome-on-Buff fragments as well as other artifacts were found in a position stratigraphically above the Chiripa culture (Bennett 1948).

No. 27, Kea Kollo Chico. On the Island of Titicaca, Bandelier (1910) found Early Tiahuanaco styles in this site which he describes as a mixed one with pots, sherds, and jumbled burials. He compares the ceramics with those from the "Chullpa" sites on Titicaca Island. These sites contain single-room dwellings, arranged in clusters of five or more, with the walls of rough stone set in mud. However, the association of these with Early Tiahuanaco is not confirmed.

Early Tiahuanaco is thus another period like Chiripa, with a distribution limited to three sites in only two of the sub-areas. Stylistically, Early Tiahuanaco seems unrelated to Chiripa and its relationship to Classic Tiahuanaco is not close, although the animal and bird designs show some resemblance. Early Tiahuanaco is still unassociated, in any convincing fashion, with architectural features. Although one group of somewhat realistic stone carvings at Tiahuanaco has been considered to be pre-Classic, there is no field evidence to confirm an Early association. Complete vessels of the Early Tiahuanaco style are in the collections at the Trocadero Museum in Paris and the Museum für Völkerkunde in Munich. These presumably came from excavated graves, but there is no record of this.

CLASSIC TIAHUANACO

The Classic Tiahuanaco, broadly defined, encompasses the vast majority of finds and features described for the type site of Tiahuanaco (No. *1*). In this case, there is good field evidence of true association of buildings, statues, and ceramic types (Bennett, 1934; Posnansky, 1945). Thus Classic Tiahuanaco includes such diagnostics as planned temples, utilizing platforms and sunken courts; a distinctive architectural style marked by upright pillars set at intervals, with block fill between, with rather elaborate jointings of these blocks and pillars; and monolithic stone gateways, many decorated with carved friezes. There are also pillar-like statues incised with fine tapestry pattern designs, various other types of stone

carving, and distinctive ceramic styles, particularly the Tiahuanaco Polychrome. In the relatively pure Classic Tiahuanaco levels, such as 1-2 in pit 8, 1-2 in pit 10, and 2-6 in pit 4 (Bennett, 1934), polychrome painting in three or more colors on a red base comprises thirty to fifty per cent of the decorated sherds. Such levels also contain considerable quantities of polished redware, many fragments doubtless pieces of painted vessels; a small per cent of polished blackware, none with incisions; and libation bowls, commonly modeled in part or in whole in the form of pumas or llamas. The Classic vessel shapes and the range of designs have been well described in the literature.

At Tiahuanaco itself, there is some evidence for temporal subdivisions of the Classic Tiahuanaco period and in its distribution there is still further evidence for subdivisions either temporal or regional. Posnansky (1945) sees evidence for two building periods, the first utilizing red sandstone, the second, lava blocks. Such a distinction seems reasonable although hard to prove. In my Tiahuanaco excavations (Bennett, 1934), the best Classic Tiahuanaco levels were associated with an old surface at about one meter below the present one. In pits 5 and 8, where the best stratigraphy was obtained, Tiahuanaco levels were found below this old surface, and above the Early Tiahuanaco. Thus levels 3-5 of pit 5, and 3-4 of pit 8, would stratigraphically represent an Early-Classic Tiahuanaco phase. Certain features of the collections from these levels confirm this suggestion. Tiahuanaco Polychrome of three or more colors on a red base forms only five to six per cent of the decorated sherds while a Tiahuanaco Bichrome forms around twenty per cent. More distinctive perhaps is the presence in good quantity, in some levels over fifty per cent, of a thick ware with red polished surface on one side. This type is largely limited to these levels. Unfortunately, this earlier phase of the Classic cannot be associated with any of the building or the stone carving, and is not distinctive enough to serve for distributional studies.

The distribution of Classic Tiahuanaco, without regard to possible subdivisions can first be considered. The known distribution at present is limited to only two of the subareas. The sites and their principal features are listed below.

No. 8, Simillake. On an island in the mouth of the Desaguadero River is a small square temple composed of dressed sandstone blocks. Here, and at a nearby site, called Iru-Itu (No. 9), surface sherds include fragments of Tiahuanaco Polychrome (Posnansky, 1934).

No. 13, Llogheta. On the hills above La Paz is a refuse mound, containing stone-lined graves and also many sherds of Tiahuanaco Polychrome. No construction work is associated (Bennett, 1936).

No. 14, Chiripa. Tiahuanaco Polychrome sherds were found in the refuse of some of the side pits, and a local collection contained complete vessels, presumably from graves. There is no construction work associated (Bennett, 1936).

No. 15, Lucurmata. A hilltop site on the shores of Lake Titicaca has a platform terraced with upright pillars, with smaller fill between, and presents features of notched stone, monolithic steps, stones with decorated niches, and pillar-like statues with incised designs. A smaller subterranean temple is built at the same site, presumably with stones taken from an older structure. A canal stone is one of its features. On the hilltop, in the temples, and in the fields around the hill, pits revealed numerous sherds of Tiahuanaco Polychrome, as well as an extraordinary number of fragments of modeled puma libation bowls (Bennett, 1936; Uhle, 1912).

No. 17, Pajchiri. On the Island of Cumana, a terraced platform is faced with notched uprights set at intervals with a smaller fill between. At the central front edge of the platform is a series of steps. The stone construction appears to be of the Classic Tiahuanaco type, but the excavations did not encounter the Tiahuanaco Polychrome ware (Bennett, 1936).

No. 20, Pariti. On the Island of Pariti are dressed stone blocks without notches. Stone-lined and covered box burials, a pit burial, and various vessels and sherds of the Tiahuanaco Polychrome type have been excavated. One grave contained gold objects and bone tubes with Classic Tiahuanaco designs. Statues have been reported, but are no longer to be found (Bennett, 1936).

No. 21, Taquiri. A fragment of a stone bowl engraved in Classic Tiahuanaco style was obtained on this island (Rydén, 1949).

No. 22, Mocachi. At this site on the peninsula of Copacabana, a temple is described, composed of upright blocks with a fill between. Some of these blocks are said to be dressed but not notched. A small statue, which would be classified as an "early" Tiahuanaco type, is associated. Stone walled graves and sherds of Tiahuanaco Polychrome have been found (Casanova, 1942).

No. 23, Chocupercas. Another site on Copacabana peninsula consists of an extensive raised platform faced on the sides with stone uprights and blocks, many of them notched. No sherd collections or excavations have been made (Bennett, 1936; Uhle, 1912).

No. 26, Titicaca. On the Island of Titicaca, no specific sites can as yet be assigned to the Classic Tiahuanaco period. On the island are dressed stone blocks and the Bandelier collection contains pottery vessels, gold objects, and carved stone tablets, which are clearly of the Classic style (Bandelier, 1910).

It is interesting to note that only Lucurmata (site No. 15) presents many of the features of the Classic Tiahuanaco complex as represented at the type site. Elsewhere, certain ones are always lacking, such as dressed stone construction, stone carving, and Tiahuanaco Polychrome. Likewise, the ceramics, while pertaining in general to the Tiahuanaco Polychrome, show local variations of designs and vessel shapes, which as previously mentioned, may be merely regional or may be slightly different in time.

The Tiahuanaco Period, presumably of the Classic phase, has a wide distribution outside of the Titicaca Basin. In the eastern Cochabamba region, it is represented in such sites as Arani (Bennett, 1936) by grave types and ceramics only. In north Chile, ceramics and carved tablets are found in the Rio Loa district, again without architecture or carving. The distribution throughout the coast of Peru is well established. However, the present study is limited to the Titicaca Basin, and the difficult problems posed by this wider distribution are left out of consideration.

It is also interesting that the Classic Tiahuanaco sites in the South Titicaca Basin are, with few exceptions, temples or ceremonial centers. In fact, house sites or villages have not yet been associated with this period. Thus, the greater elaborateness of the Classic Tiahuanaco at its type site may imply nothing more than the importance of that ceremonial center.

Kidder (1948) has summarized the similarities between Pucara in the North Titicaca Basin and Tiahuanaco in the South. These similarities are either general ones, such as planned temples, stone carving, dressed stone, or very detailed ones, such as split eye design, feather design, and the like. The conclusion, at the moment, is that neither of these major centers can be considered as derived from the other.

DECADENT TIAHUANACO (WANCANI)

Decadent Tiahuanaco was so named on stylistic grounds when compared with the Classic Tiahuanaco. However, in my Tiahuanaco (site No. 1) excavations (Bennett, 1934) Decadent Tiahuanaco was also considered as a distinct period following the Classic, because it was isolated in some of the upper levels of the pits, and because it was associated with a rebuilt semi-subterranean temple in pit 7. The assignment of this small temple to the Decadent period allowed the association of certain types of stone carvings, particularly a small bearded statue. Today, the name Wancani might be more appropriate, since Rydén (1947) clearly isolated the style and the period in his excavations at that site. In the Tiahuanaco excavations the distinctiveness of the Decadent Tiahuanaco was noted in the ceramic styles. The Tiahuanaco Polychrome style continues but is reduced in the number of colors, and the variety of shapes and designs. Two new ceramic types are found: one is a thick ware, decorated with black designs of bands or steps; the other is a relatively thick orange ware, with crude incised designs. There is also a polished black ware with incised decoration.

The South Titicaca distribution of the Decadent Tiahuanaco period is more extensive than that of the Classic, and frequently the sites do not coincide. The principal ones and their associated features are listed below.

No. 2, Wancani. This site lies in the drainage of the Desaguadero River and consists of a hilltop platform with three semi-subterranean rectangular courts, outlined with dressed stone blocks. A canal is associated and there are also three carved monolithic pillars. The pillars are designed to represent statues with crossed arms, like the small one in pit 7 at Tiahuanaco. The carved design details are well executed, but the style as a whole differs from that of the Classic Tiahuanaco (Portugal, 1941). Rydén (1947) excavated eight pits at this site and four more on a nearby knoll. While surface sherds included Inca and Khonkho Black-on-Red types, the pits contain almost exclusively Decadent Tiahuanaco styles. Stone-lined box graves with Decadent Tiahuanaco vessels are also found. This site becomes, therefore, the one which best isolates a Decadent Tiahuanaco style, associates it with other features, and places it in a pre-Inca, pre-Khonkho position.

No. 4, Sollkatiti. At another site near Wancani, Rydén (1947) found further evidence of the Decadent Tiahuanaco. Here it is represented by vessels from stone box and stone-lined graves, and by sherds from house sites of two types. The first has rectangular foundations, with walls outlined by a double row of slabs. The second is an oval subterranean house entered from above through the stone roof.

Nos. 10-12. Tiahuanaco collections in the Munich Museum contain Decadent Tiahuanaco vessels found in graves at three sites, designated as Achuta (No. *11*), Pucarani (No. *12*), and Quenachata (No. *10*), all in the Tiahuanaco region.

No. 14, Chiripa. The Chiripa mound is stone faced with a wall of upright slabs of rough stone set at intervals with a fill between of smaller stones. In the center of the mound is a semi-subterranean, rectangular temple, also faced with uprights and blocks. The stratigraphic analysis identifies facing wall and temple as Decadent Tiahuanaco. Sherds of this type are found in the upper levels of the excavation, stratigraphically above Chiripa styles, and there are also intrusive, bark-lined graves, containing Decadent Tiahuanaco vessels (Bennett, 1936).

No. 17, Pajchiri. Decadent Tiahuanaco vessels are found in local collections on the Island of Cumana (No. *16*), and surface sherds of this style are found at Pajchiri (No. *17*) temple (Bennett, 1936).

No. 20, Pariti. Both sherds and complete vessels are encountered in excavations on Pariti (Bennett, 1936).

No. 22, Mocachi. Casanova's (1942) excavations at this site on Copacabana peninsula, encountered a slab-box burial above a Classic Tiahuanaco layer and below an Inca burial. The sherds and associated vessels were of Decadent Tiahuanaco style. He also describes a bearded statue, similar in many details to the one of pit 7 at Tiahuanaco.

No. 26, Titicaca. The Bandelier collections from the Island of Titicaca (Bandelier, 1910) contain complete vessels and sherds of Decadent Tiahuanaco style.

No. 29, Pelechuco. Near this town on the Peruvian-Bolivian border, east of the lake, Bandelier (MS) encountered rare pottery vessels and sherds of the Decadent style.

No. 30, Charassani. At another town near the last mentioned, Bandelier (MS) collected excellent pottery of the Decadent Tiahunanaco style.

The Decadent Tiahuanaco distribution covers all three sub-areas in Bolivia. In the Kidder (1943) and Tschopik (1946) surveys, Decadent Tiahuanaco is reported for six sites; one in the Taraco sub-area, four in Puno, and one in Juli. Thus, the Decadent Tiahuanaco has been found in all but the Moho sub-area, and the Bandelier collection from Charassani suggests its presence there too. The concentration, however, seems definitely to be on the south and west side of the lake.

The major Decadent Tiahuanaco sites all appear to be ceremonial centers. In three sites, Tiahuanaco (No. *1*), Wancani (No. *2*) and Chiripa (No. *14*), stone faced, semi-subterranean enclosures are associated. The associated stone carving includes bearded statues and statues with arms crossed on the chest. Burials are found in stone box tombs, and in bark-lined graves, but there is, as yet, no direct association with the above-ground "Chullpa" burial towers. Individual house sites are identified with this period, but there are no extensive village sites.

The Decadent Tiahuanaco seems clearly to be a late continuation of the Classic Tiahuanaco. A few sites contained sherds of the Khonkho period, and suggested a slight overlapping of the two. However, there is no evidence of contemporaneity with the Inca period.

Khonkho

In the excavations at Wancani (No. *2*), Rydén (1947) encountered a black-on-red ceramic type, which he designated "Post-Decadent Tiahuanaco" but still pre-Inca. At Pucara de Khonkho (No. *3*), a village on top of a naturally fortified hill, the black-on-red style was isolated and associated with stone-lined, circular house foundations. The name "Khonkho" is thus proposed for the style and the period. The Khonkho Black-on-Red style is represented by shallow, open bowls, one-handled pitchers, two-handled small ollas, and tall collar jars with two side handles. The designs are crudely executed rows of dashes, cross hatch, triangles, and other such simple elements. The vessel shapes, the designs, the colors, and the execution suggest a close affiliation with the Collao Black-on-Red, as defined by Tschopik (1946). The distribution of Khonkho is still limited, but there seems little doubt that future study will expand it.

No. 2, Wancani. The Khonkho sherds are found on the surface and in the top levels of some of the pits, where they are mixed with Decadent Tiahuanaco (Rydén, 1947).

No. 3, Pucara de Khonkho. The isolation and associations at the type site have already been mentioned.

No. 4, Sollkatiti. Rydén (1947) found both Khonkho and Inca sherds in the surface collections.

No. 14, Chiripa. A shallow burial contained vessels of this style (Bennett, 1936).

No. 17, Pajchiri. Khonkho sherds were found on the surface and in the excavations at this temple (Bennett, 1936).

No. 21, Taquiri. Khonkho Black-on-Red vessels were found in a Chullpa burial tower (Rydén, 1947).

My 1932 survey of the Achacache sub-area (Bennett, 1933) located over forty villages, some containing over one thousand houses. Most of these villages are situated on hilltops or mountain spurs. They are encircled by fortification walls within which are interior courts, and both round and rectangular houses with corbelled stone roofs. Stone burial towers called "Chullpa" are found in many of the villages. Adams (MS) has made a study of the plans and details of these fortified villages, and has come to the conclusion that most of them are pre-Inca. While the surface sherds are not particularly distinctive, identifiable Inca styles are exceptionally rare, and the few decorated pieces show simple black-on-red designs. Consequently, the assignment of some of the villages to the Khonkho period is implied.

This implication is augmented by an examination of the Chullpa burial towers. For the North Titicaca Basin, Tschopik (1946) classifies the Chullpas into four major types. Her first two types have not yet been reported for the South Titicaca Basin. However, her type 3, which consists of a rough stone tower built over a subterranean stone-lined chamber does occur in some of the villages in Achacache and also on the Island of Taquiri (Rydén, 1947). Tschopik (1946) associates the type 3 Chullpas with the Collao Black-on-Red style. Furthermore, this type of Chullpa is generally found in fortified villages in the Moho sub-area northeast of the lake. The type 3 Chullpa excavated by Rydén (1947) on Taquiri Island (No. 21) contained the Khonkho Black-on-Red style. However, it must be noted that most of the Chullpa towers in the Achacache villages are rough stone towers with above ground chambers of a type not included in the Tschopik classification.

If the Collao Black-on-Red and the Khonkho Black-on-Red are considered to be manifestations of the same culture, a wide distribution in the Titicaca Basin is implied, but still with the greatest concentration on the eastern side of the lake.

INCA

The Inca occupation is represented by decorated sherds, clearly of Cuzco types, stone masonry suggestive of Cuzco Inca parallels, and various diagnostic Inca artifacts. Rowe (1944) has classified Inca pottery into a number of distinctive styles, some early and some late. Tschopik (1946) has identified many of the late styles of Inca pottery in the North Titicaca Basin. The Rowe classification has not yet been applied to Inca ceramics in the South Titicaca Basin, although cursory examination shows no trace of the early, or Killke series. In this review of Inca distributions in the South, subdivisions of Inca wares are not followed. The major sites identified as Inca are listed below.

No. 1, Tiahuanaco. Inca sherds are found on the surface and in the top levels of some of the pits, although unassociated with any other features (Bennett, 1934).

No. 2, Wancani. Rydén (1947) encountered many Inca sherds and artifacts on the surface at this site, but not in the excavated pits.

No. 4, Sollkatiti. A house site and sherds of the Inca period were encountered by Rydén (1947).

No. 5, Palli Marca. Rydén (1947) encountered an Inca village with shallow, stone-lined, oval and round house sites.

No. 6, Cchaucha del Kjula Marca. Rydén (1947) describes two Inca villages, one of which contained a few post-Columbian artifacts.

No. 7, Kala Sayani. An Inca house site was excavated by Rydén (1947) at this site.

No. 9, Iru-Itu. At a site near the mouth of the Desaguadero River, Posnansky (1937) found a few Inca sherds.

No. 11, Achuta. Rydén (1947) excavated a ground level grave of the Inca period.

No. 17, Pajchiri. The Pajchiri temple on Cumana Island has every appearance of Classic Tiahuanaco construction, but the rectangular house sites on its platforms are of the Inca period. In the excavations, many Inca sherds and stone covered burials were encountered (Bennett, 1936).

No. 18, Quehuaya. A large village on this island has over two hundred houses and twenty-four stone towers. It has been designated as Inca period, although this is not proven (Bennett, 1936).

No. 19, Intja. On this small island is a terrace wall of typical Inca polygonal style.

No. 20, Pariti. Inca sherds were found on the surface and in some of the excavated pits (Bennett, 1936).

No. 22, Mocachi. Casanova (1942) describes an Inca bath and a pit burial.

No. 24, Copacabana. Near this town, many Inca constructions are found (Squier, 1877).

No. 25, Tiquina. At the extreme eastern end of the peninsula of Copacabana, Rydén (1947) encountered an Inca fortress.

No. 26, Titicaca. For the Island of Titicaca, Bandelier (1910) describes numerous buildings of well cut stone, burials, pottery, and miscellaneous artifacts, all clearly of the Inca period.

No. 28, Coati. The island of Coati, also investigated by Bandelier (1910) presents several constructions and many artifacts of the Inca period.

Nos. 29-30. From Pelechuco and Charassani, on the borderline between Peru and Bolivia, Bandelier (MS) collected Inca pottery.

No. X, Achacache. Some of the numerous villages found in this sub-area may pertain to the Inca period, although as previously mentioned, there is certain evidence that some may be earlier.

This review of Inca distributions is not complete, but is sufficient to show the extensive Inca occupation of the South Titicaca Basin. Tschopik's (1946) survey of the North shows a similar situation. However, the Inca manifestations are not too uniform. For example, dressed stone Inca masonry is found in the North Titicaca Basin and in the Copacabana sub-area of the South, but not on the mainland. East of the lake, villages are fortified; south of the lake and on the islands they are not. Oval and round house foundations appear to be a local type in the South (Rydén, 1947).

For the North Titicaca Basin, Tschopik (1946) has described many local ceramic styles, some of which seem slightly pre-Inca, others contemporaneous, and others post-Inca. Such refinement has not, as yet, been made for the

SOUTH TITICACA BASIN				NORTH TITICACA BASIN				
PERIODS	COPACABANA	TIAHUANACO	ACHACACHE	MOHO	TARACO	PUNO	JULI	PERIODS
INCA	9	8	2+	+	2+ 8+ 3	5+ 17+ 2	1 2	Chucuito INCA Taraco
KHONKHO	2	4	20+	5	2+ 9	3+ 2 1	+	Sillustani COLLAO Allita Amaya
DECADENT TIAHUANACO	4	7	2		1	4	1	DECADENT TIAHUANACO
CLASSIC TIAHUANACO	6	6						
EARLY TIAHUANACO	1	2			4	1	2	PUCARA
CHIRIPA	3	3						

FIG. 35. Site Distribution by Periods and Sub-areas in the Titicaca Basin.

South Titicaca Basin, but it would not seem unlikely that a similar situation existed. Rydén (1947) is impressed by the lack of Inca mixture with local styles in the South.

Some of the Bolivian sites which are identified as Inca also contain post-Columbian material. Rydén (1947) demonstrates that some of the adobe Chullpa burial towers are truly post-Columbian. As yet, however, studies of post-Columbian occupations have not been properly made.

THE TITICACA BASIN AS A WHOLE

The review of distributions in the South Titicaca Basin added to the surveys of Kidder (1943) and Tschopik (1946) in the North permits a general discussion of the Basin as a whole. The combined information on site distributions, in terms of sub-areas and major periods, is presented in chart form (Fig. 35). Although there are still many gaps in our knowledge of this region, some interpretation is possible.

One is immediately impressed by the importance of the sub-areas throughout the history. A basin with limited terrain suitable for habitation, with a consistent environment, and with no major blocks to land travel, plus the facility of water travel on the lake, might be expected to foster reasonable cultural uniformity. The archaeological 'evidence, however, points consistently to the lack of overall unity. To be sure, the most favorable areas for cultural development are in the extreme northern and southern ends of the lake. These two sub-areas never seem to have been united, except in the Inca period and even then there are significant differences.

In the early periods, as now known, the North Titicaca Basin was dominated by Pucara, the South by Tiahuanaco. The distribution of these major periods is mutually exclusive. In fact neither is clearly represented on either the eastern or western side of the lake. To be sure the two share certain general features, such as planned construction, stone carving, polychrome ceramics, and design details, but the major formulations are distinct. In the North, Kidder's (1943) survey suggests that non-Pucara early styles may be encountered by future excavators. In the South we already have isolated two non-Tiahuanaco early periods, Chiripa and Early Tiahuanaco, both with restricted distributions.

The first suggestion of Basin unity comes in the Decadent Tiahuanaco period. However, the ceramic finds in the North are decidedly rare and are not isolated in specific sites. Furthermore, the major sites are concentrated on the southern and western part of the lake.

By uniting the Khonkho and Collao Black-on-Red styles in one period, a fairly extensive distribution can be plotted, but the great concentration is on the eastern side of the lake. If the fortified villages of the Achacache and Moho sub-areas are assignable to this period, the eastern concentration is augmented. The association of both Khonkho and Collao Black-on-Red styles with Tschopik's (1946) type 3 Chullpa gives greater unity to the period, but does not effect the distribution analysis. In any event, total Basin unity is not achieved since no sites are reported for the Juli sub-area and in the North, Tschopik's (1946) Sillustani series, which falls in this same time period, is found mainly in the Puno sub-area, while the Collao Black-on-Red is seldom encountered west of Taraco.

As stated earlier, the Inca period unites the Titicaca Basin, but even in this case, there are many local differences. Again the concentration of sites is found in the extreme northern and southern ends of the Basin. In the North, contemporaneous local styles are found, the Chucuito in the Puno sub-area, Taraco Polychrome in Taraco sub-area. It has also been shown that typical Inca stone masonry has a limited distribution and that Tschopik's (1946) type 1 Chullpa, a circular or square tower of dressed stone, although common in Inca period sites in the North, does not occur in the South.

The accounts of the Aymara Indians at the time of the Inca conquest indicate that the Titicaca Basin was occupied by four major groups, each differing in dialect, and seldom united. The Colla occupied the Taraco sub-area, the Lupaca the Puno and Juli sub-areas, the Pacasa the Tiahuanaco sub-area and the Omasuyu the Achacache and Moho sub-areas, all corresponding generally to divisions suggested by the archaeological record. Even the political division of today between Peru and Bolivia seem to reflect in part an ancient cleavage.

This review of the cultural history of the Titicaca Basin does not show extreme contrasts in the sub-regional development at dif-

ferent time periods, but likewise does not present a picture of cultural uniformity. Kidder (1943) repeatedly warns against hasty generalizations on the basis of present fragmentary evidence, but although future work may extend the distribution of the known periods it will probably reveal evidence of even greater local diversity. If cultural uniformity cannot be demonstrated for the Titicaca Basin, exceptional in the highlands because of the lake, it is extremely dubious that an assumption of this kind would be valid for other basins.

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TEST EXCAVATIONS AT THE LAKE JACKSON SITE

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THIS PAPER gives the results of test excavations conducted at the Lake Jackson site, Leon County, Florida by the Florida Park Service during the months of April and May, 1947.[1] During this time systematic excavations were made in a portion of the village area lying in the vicinity of the large mounds for which the site is well known. These excavations were preliminary in nature, and it is hoped that they will be followed by more definitive study.

LOCATION AND DESCRIPTION

The majority of the site is located on Lots 472, 473, 474 and 475 of Section 10, T 1 N, R 1 W, but Mound 1 lies north of this area, and Mounds 6 and 7 are east of the area in Section 11 (Fig. 36). The site is on the west side of McGinnis' Arm, the southern arm of Lake Jackson, about four and a half miles north-northwest of the center of the city of Tallahassee.

Lake Jackson occupies a broad basin, which it does not always fill, and which it sometimes overflows. In the summer of 1948 Lake Jackson rose to heights which flooded U. S. Highway 90 west of the lake, but left the mounds and village area, which one would suspect would be subject to floods, quite dry. The location, then, was well chosen. To the west of the site bluffs rise rather sharply from roughly 100 feet above sea level to over 200 feet. It is in the half mile or less between these bluffs and the lake, on relatively level ground, that the site is located.

The site is dominated by five large mounds, the arrangement of which may be seen in Figure 36. Mound 2 is the largest, measuring approximately 300 feet in diameter, with a pentagonal summit plateau almost exactly 100 feet across, is approximately 30 feet high. There are suggestions of a ramp on the east side of this mound. The other mounds are smaller, and like the large mound are flat topped. All of them apparently are capped with red clay mantles.

At the present time the greater portion of Lots 472-475 are planted in pecan trees, although forest trees cover Mounds 2, 3, and 5, border the creek, and fill the area west of Mound 4. The summit and east side of Mound 4 have been cleared of vegetation. Mound 6 is in a clump of trees, but the area in Section 11, and to the north of the lots mentioned above is in improved pasture for dairy purposes. The planting of the pecan grove naturally disturbed the village area.

PREVIOUS EXCAVATIONS

There is considerable evidence of pot-hunting activity at this site. Most of the mounds have holes dug into the tops, and there is a large trench gashed into the south side of Mound 2. The surface and the stream bed are combed regularly by boys from Tallahassee, but the site is so large that the damage to it has been comparatively slight.

In 1940 Gordon R. Willey visited the site as part of the survey of the northwest Florida coast conducted under the joint auspices of Columbia University and the National Park Service by him and R. B. Woodbury. Two pits, 3 by 3 meters each, were dug in the locations shown in Figure 36. Information on these test excavations is available. (Willey, 1940, and 1949, pp. 95-99; Willey and Woodbury, 1942, p. 247 ff.)

EXCAVATIONS

Our own excavations were largely confined to the village area but certain tests were also conducted on the mounds. These will be summarized below.

Mound 2. In the large gash on the southern side of Mound 2 a face was cleared from the summit plateau to the depth of five feet nine inches. The section revealed by this clearing was: Surface to 1′5″—Humus and clayey humus; 1′5″ to 2′3″—Red clay (mantle); 2′3″ to 4′3″—Mixed and banded loads of clay, loam and sandy loam (fill); 4′3″ to 5′0″—Light clay (mantle); 5′0″ to 5′9″—Black muck to base of face (fill). Thus there are obviously two building stages represented in the face which was

[1] The writer wishes to thank E. M. Murphy, Jr., for his help as Field Assistant during the excavations, and Miss Lois Watkins, who acted as recorder during a portion of the time at the site. Mr. L. K. Ireland, owner of the portion of the site on which we worked, was most cooperative, and to him our hearty thanks are due. The site is numbered Ln 3 in the Florida Park Service survey.

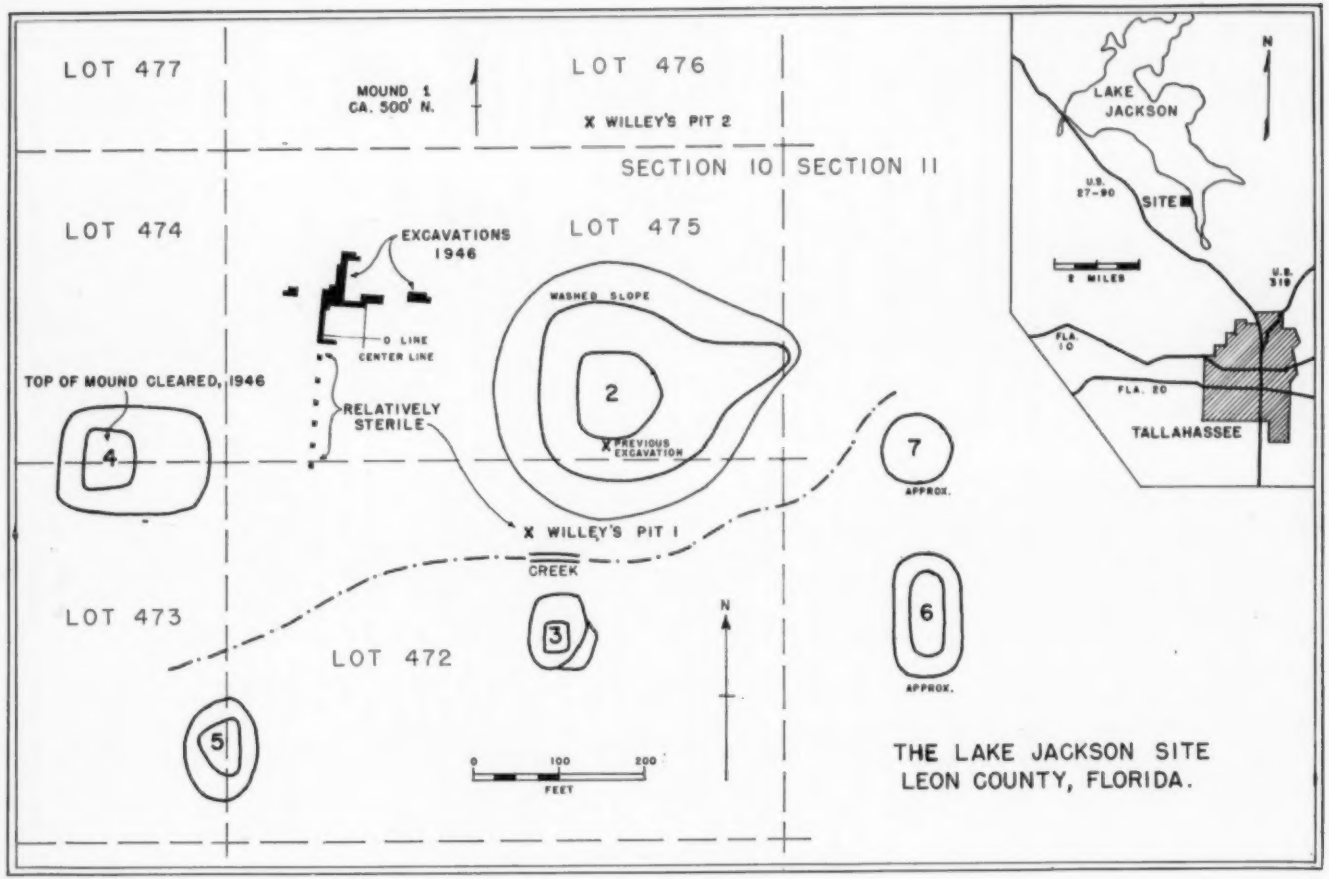

FIG. 36. Map of the Lake Jackson site.

exposed, each consisting of a fill layer and a clay cap or mantle. A humus layer had accumulated over the last mound surface.

Mound 4. The summit plateau of Mound 4 was cleared of brush, the area was staked out in five-foot squares, and the thin humus layer was shoveled off to reveal the hard-packed and sun-baked red clay mantle. The purpose of this clearing was to determine, if possible, the floor plan of the structure which had stood atop the mound. Seven possible post holes were discovered, but they gave no indication of plan. Deeper cutting, which might have been more successful, was not attempted because of the hardness of the clay and the shortage of time at our disposal, the work being the last done during the investigation. The humus was thrown back over the cleared area.

Village Area. A total of 87 five-foot squares was excavated in the village area of the site (Fig. 36). These were preceded by a series of small test holes to locate areas in which the cultural material seemed to be concentrated. All squares were excavated in arbitrary six inch levels, and the material so catalogued.

In general the physical stratigraphy in the village area consisted of about 18 inches of dark loam atop white sand. Plowing, planting and aboriginal pitting had seriously disturbed the occupation level or levels. In most cases it was impossible to distinguish pits until they appeared as intrusions into the undisturbed levels of white sand or clay. All of these factors made any analysis of stratigraphy difficult. Future work at the site may, however, be more successful, now that certain of the problems involved are recognized.

Certain features, aside from dark pits with refuse material in them, did occur at the site, although none of them told a very lucid story. In two places rather large areas of white marly clay, with charcoal-flecked upper surfaces, were found. At first it was suspected that these were house floors, but they no longer retained enough form to definitely establish them as such. One, in squares 50L17 and 55L17, was about 3'6" by 7'0" in size, and had three potential post holes on its southern and eastern margins. The other, in squares 50L6 and 50L7 was approximately 5 feet square. The nearest possible post holes were about 10 feet away in square 40L5.

A third area, heavily flecked with burned clay and charcoal about one foot beneath the surface, was of a size to suggest a small house. This area, roughly rectangular, virtually covered six squares, and was about 10 by 15 feet in size. The squares involved were 45, 45R1, 45R2, 50, 50R1, and 50R2. The relation of these various areas to the ceramic picture at the site will be discussed in a later section of this report.

In two places, squares 65L5 and 75L5, small areas of charred rush were discovered. Whether this represented basketry and/or matting is not known. Throughout the excavations areas of charcoal, dark pits, burned clay flecks, and potential post holes were found, but in no case could any interpretation be placed upon them that would illuminate problems of structure and use. Presumably the plowing, planting, and pitting mentioned earlier had been too extensive to permit adequate preservation of information. It was noted, however, that the charcoal and burned clay flecking usually occurred about one foot beneath the surface.

South of the –5 line a series of test pits were put in at intervals all the way to square –150L9 (Fig. 36). All of these were either completely or relatively sterile, and contained sand rather than the darker loam. These tests may be summarized as follows:

Square –25L9, 15 sherds—Sand to base of level 3 (18″); –50L9, no sherds—Sand to base of level 3; –75L9, 4 sherds—Sand to base of level 3; –100L9, no sherds—Sand above, clay at 18″; –125L9, no sherds—Sand above, clay at 12″; –150L9, no sherds—Sand above, clay at 8″. It will be noted that these squares have practically no cultural materials, are not heavily tinctured with organic materials, and that the farther south one goes, the nearer the clay is to the surface.

Willey's Pit 1 was located about 200 feet east-southeast of square –150L9. As it happened, this test was relatively sterile. His consolidated level of sandy clay with charcoal flecks, found at .45 meters (about 16″), probably corresponds to the clay mentioned in the squares excavated by us. It will be remembered that under this level Willey found clean white sand and then more clay with traces of charcoal. Our own tests did not continue downward to check this feature.

The relative sterility of these test squares, both Willey's and our own, suggests an area with little or no actual occupation. Reference

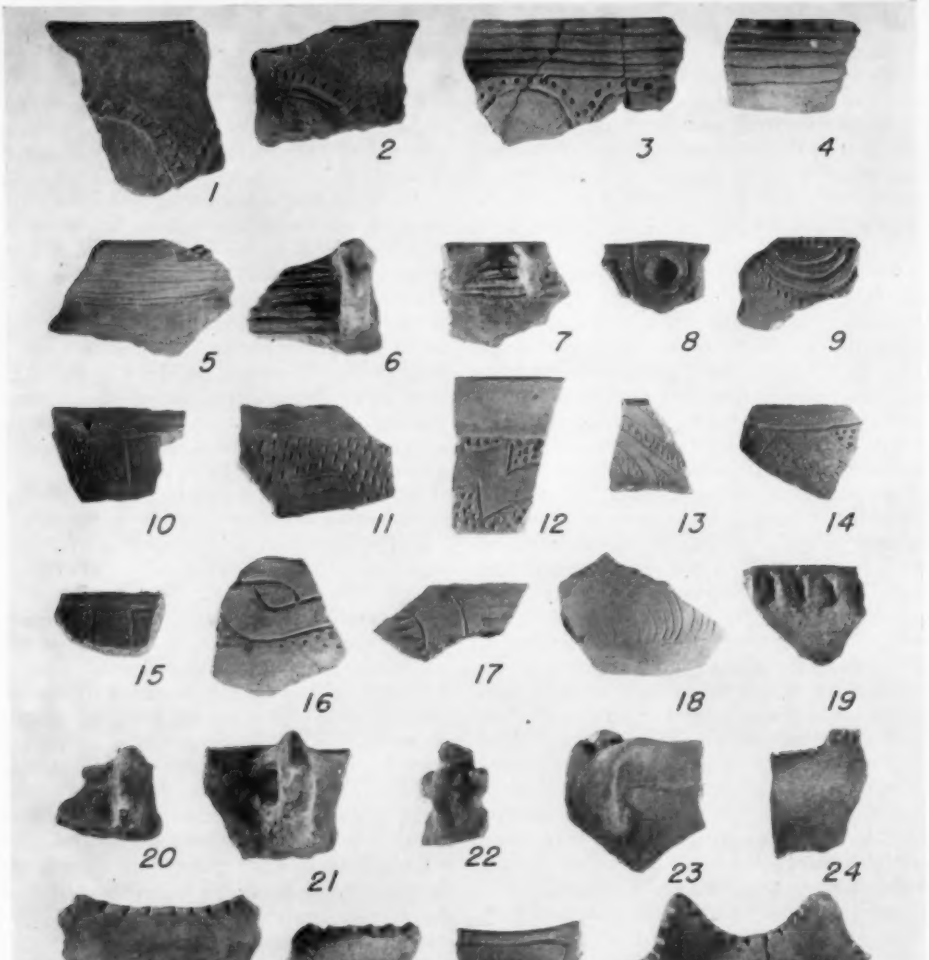

FIG. 37. Pottery from the Lake Jackson site. *1, 2,* Pinellas Incised sub-type A; 3, combination of sub-types A and B, Pinellas Incised; *4-7,* Pinellas Incised sub-type B; *8-10,* Pinellas Incised sub-type C; *11-16,* Ft. Walton Incised sub-type A; *17, 18,* Ft. Walton Incised sub-type B; *19,* Lake Jackson Plain sub-type A; *20,* Lake Jackson Plain sub-type B; *21-23,* Lake Jackson Plain, sub-type C; *24-30,* Lake Jackson Plain sub-type D.

to Figure 36 will disclose that the area in question lies between Mounds 2 and 4, and to the north of Mounds 3 and 5. It is suggested that this was a plaza area on which debris was not permitted to accumulate. Further testing at the site would probably establish more fully the village plan.

FOOD REMAINS

Food remains were scarce at the Lake Jackson site, and the few bones which were found were in poor condition. Undoubtedly the soil at the site was not conducive to good preservation. Deer bones were by far the most numerous finds, but a few bird and turtle bones were also found, as was a small amount of badly disintegrated freshwater (?) shell.

The Fort Walton Period is known to extend into early historic times, and the references to intensive maize agriculture contained in early accounts of the region may be applied to the Fort Walton Period with little possibility of error. The evidence from the site is sufficient to indicate that hunting supplemented agriculture in the economy.

ARTIFACTS

Clay pipes. One nearly complete clay pipe and fragments of fifteen others came from the excavations. The nearly complete pipe (Fig. 38, *21*), of equal arm type, is decorated with a rather elaborate design of small sharp punctations. The bowl section is rounded, while the shank is squared. Inside measurements of the bowl give a diameter of 18 mm, and a depth of 33 mm. Most of the other pipes were apparently about the same size and shape, although none of them show any suggestion of square shanks or bowls. Figure 38, *22* is a portion of an incised pipe bowl. Figure 38, *18* is a scored bowl fragment, and Figure 38, *20* is a portion of a pipe shank with some decoration and a lug, and may have come from the previous pipe or one similar to it. Figure 38, *19* shows a portion of a plain bowl with a lip lug reminiscent of those on vessels of Lake Jackson Plain pottery. Figure 38, *23* is the most atypical fragment of the lot, and is apparently part of a pipe of a quite different type than those described above.

The size of all of these pipes is small when compared with pipes from Weeden Island burial mounds. On the basis of size and quantity of pipes at this site it is suggested that smoking was not bound solely to the ceremonial aspects of life.

Clay and stone discs. Nineteen clay discs, fashioned from potsherds, were found, three of which had very smooth edges (Fig. 38, *30*). In size they range from 23 to 50 mm. in diameter, with the majority around 40 mm. Eleven similar discs of limestone occurred, differing mainly from the clay ones in thickness. Whereas the clay discs averaged about 8 mm. in thickness, the stone ones range from 13 to 25 mm., with an average at about 20 mm. In diameter the stone discs range from 30 to 45 mm. One of the specimens has an incised groove across one face (Fig. 38, *29*). Another, fragmentary, specimen was part of a perforated "doughnut-like" disc. Presumably these discs were gaming pieces of some kind.

Discs of this kind occur in other Fort Walton Period sites in northwest Florida, and also occur in the later Leon-Jefferson Period (Smith, 1948, p. 316). They are widespread in the Southeast at such sites as Charlotte Thompson Place and Thirty-Acre Field on the Alabama River (Moore, 1900, pp. 323 and 341), and the Nacoochee Mound in Georgia (Heye, Hodge and Pepper, 1918, pp. 72 and 80-82, Pl. 43 and 51). They are undoubtedly related to the more finely finished stone specimens usually thought of as the discoidal complex associated with Middle Mississippi manifestations.

Projectile points. Chipped stone artifacts were rare, as for that matter were all artifacts. One complete and nine fragmentary specimens were found. The four examples which disclose some evidence of form are shown in Figure 38, *24-27*. It will be noted that no small triangular points were found, Figure 38, *27* being the closest approach to that form.

Stone celts. Six fragments of greenstone celts were found. They were too incomplete to permit a description of celt form.

Grinding stones. Seven fragments of flat sandstone grinding stones were found. These specimens have at least one very smooth surface, which tends to become concave on the more used examples.

Sharpening stones. Five pieces of sandstone were found which displayed sharpening grooves, usually several on the same specimen. One would expect these to have been used for sharpening bone tools, but no bone tools were

found at the site. However, bone was poorly preserved at the site and tools made of it may have disappeared.

Shell objects. An object of shell, 44 mm. long, 25 mm. wide and 15 mm. thick, with a bi-conoidal perforation, was found in the excavations (Fig. 38, *28*). A portion of a conch columella with a cut end was also found. Included here, although not of shell, is an unworked fossil crinoid stem.

Lead bullets. Two lead bullets were found at the site. One of these was a musket ball found nine inches beneath the surface in one of the test holes. It measures approximately caliber .58, a common mid-nineteenth century size. The other is bullet shaped, about the same caliber, and possibly came from a nineteenth century powder and ball paper cartridge. Both are almost certainly later in time than the aboriginal occupation, and deserve notice only because they were the only historic objects found beneath the surface. There was very little later debris on the surface of the site.

POTTERY

The following descriptions of pottery from the Lake Jackson site are based on 8,272 sherds, of which 7,771 came from the excavations in the village site. Inasmuch as Willey's publication on the Florida Gulf Coast (Willey, 1949) contains pottery type descriptions, those defined by him will not be given in detail here. The comments in this section will serve mainly to identify the types as we see them at Lake Jackson and to note variations, or "sub-types," utilized in the analysis of the Lake Jackson material.

The vast majority of the sherds are tempered with rather coarse grit, although some sand tempering also occurs. The ware tends to be coarser and more contorted than in earlier periods in the area. The few examples of shell tempering are, of course, not to be included in these comments.

Fort Walton Incised. The name was first applied and a brief description given by Willey and Woodbury, and three sub-styles were noted (Willey and Woodbury, 1942, p. 244). A more complete description has been given by Willey, and sub-style 3 of the previous description has been dropped and made into another type, Point Washington Incised (Willey, 1949, p. 463). In general the type description fits the specimens from Lake Jackson. It may be noted that the vast majority of the sherds so typed from the Lake Jackson site were of rectilinear figures filled with punctates, and that stylized anthropomorphic or zoomorphic figures with punctations sparingly used were not present, although it must be recognized that these would be more difficult to recognize on sherds than on vessels.

For our purposes, two divisions were made in this type. Sub-type A consists of those sherds in which punctates fill incised outlines. In addition sherds covered with punctates, but with no bordering lines visible, were classed as Fort Walton Incised A on the assumption that they were most probably background filling, an assumption strengthened by the apparent absence of any over-all punctated types. A representative sample may be seen in Figure 37, *11-15*. Sub-type B consists of sherds in which the design is executed solely by incision (Fig. 37, *17-18*). In the major sample of 7,771 sherds there are 211 of sub-type A and 13 of sub-type B.

Safety Harbor Incised. The brief description in Willey and Woodbury (1942, pp. 244-245) covers both Safety Harbor Incised and Pinellas Incised as they are now defined by Willey (1949, p. 479). The few sherds, only 21 out of the sample of 7,771, that are classified as Safety Harbor Incised from Lake Jackson are at the sand tempered end of the paste range given by Willey. In some instances it is difficult to distinguish between Safety Harbor Incised and Fort Walton Incised, and there may be some error in our classification. Sherds from the site are shown in Figure 38, 6-7.

Pinellas Incised. Pinellas Incised as defined by Willey (Willey, 1949, p. 482) has a paste range like that for Pinellas Plain and Safety Harbor Incised. That is to say it ranges from a compact sand tempered paste, through one with medium-coarse sand, to a clayey, possibly temperless, paste that is laminated and crumbly. Pinellas Incised at the Lake Jackson site is of the coarsely tempered variety, and there is none of the clayey variety. In fact, in many instances the paste is indistinguishable from Fort Walton Incised, although taken as a whole the Pinellas Incised inclines toward a more contorted paste and a lumpier surface, i.e., is generally cruder.

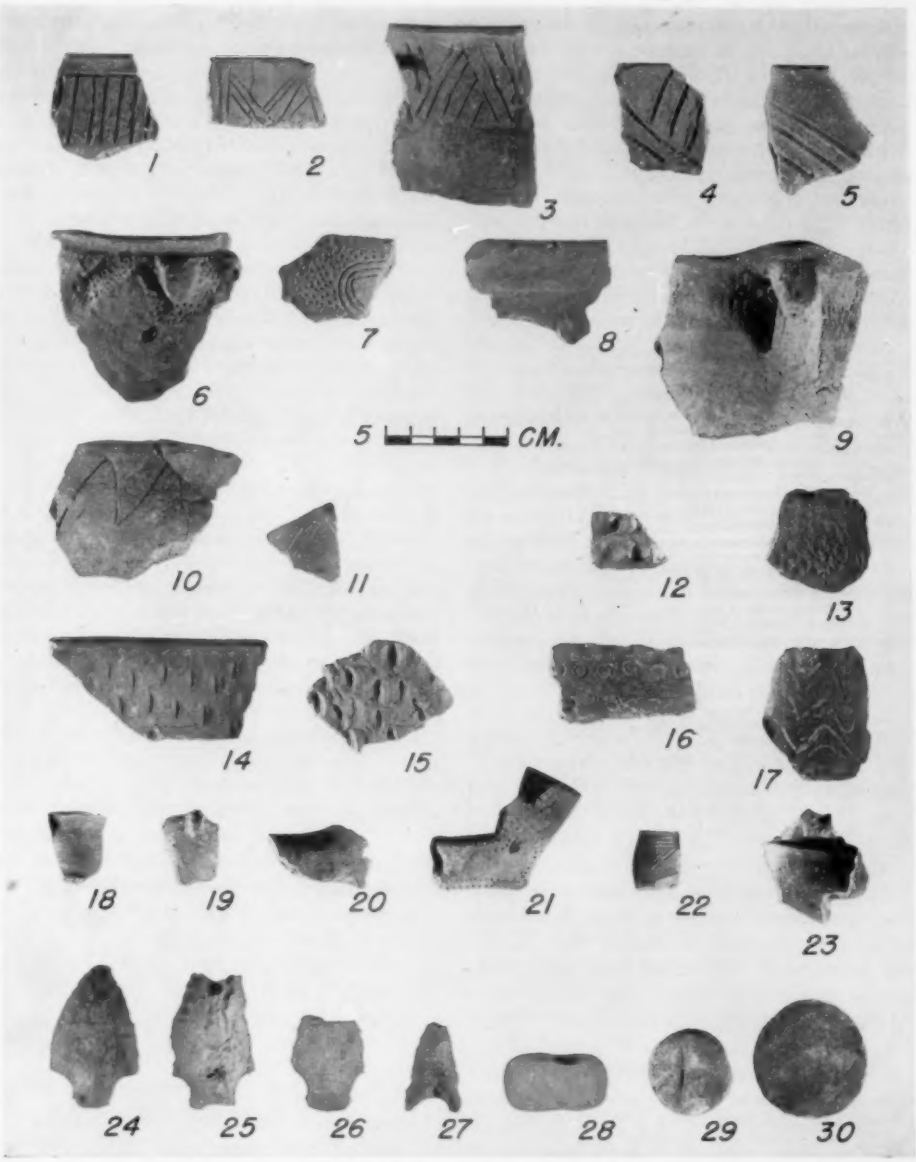

FIG. 38. Pottery and other artifacts from the Lake Jackson site. *1*, Marsh Island Incised sub-type B; *2*, *3*, Marsh Island Incised sub-type A; *4*, *5*, Marsh Island Incised sub-type C; *6*, *7*, Safety Harbor Incised; *8*, Shell-tempered incised; *9*, Alachua Cob-marked; *10*, *11* miscellaneous incised; *12*, noded; *13*, check-stamped; *14*, *15*, Lake Jackson Fingernail Impressed; *16*, miscellaneous punctated; *17*, miscellaneous incised; *18-23*, pipe fragments; *24-27*, projectile points; *28*, shell artifact; *29*, stone disc; *30*, pottery disc.

For purposes of analysis we divided this type into three sub-types based on design. The number of sherds in each case is of the 7,771 sample. Sub-type A, 72 sherds, has a single line arcade encircling the vessel, with punctations bordering the arcade (Fig. 37, *1-2*). Sub-type B, 191 sherds, has parallel lines encircling the vessel rim (Fig. 37, 4-7), and is sometimes combined with sub-type A (Fig. 37, 3). Lip notching is frequent and lugs and handles as on Lake Jackson Plain are not uncommon. Sub-type C, 23 sherds, has volutes and miscellaneous motifs, with some of the volutes pendant from lines as in sub-type B (Fig. 37, *8-10*).

Lake Jackson Plain. A brief description occurs in Willey and Woodbury (Willey and Woodbury, 1942, p. 245), and a fuller one in Willey (Willey 1949, pp. 458-460). The majority of the Lake Jackson Plain sherds from the Lake Jackson site are coarsely tempered, contorted and lumpy surfaced. In this respect they are very like the paste of Pinellas Incised at this site, and somewhat unlike Fort Walton Incised. This is important since Willey's over-all type description has Fort Walton Incised with the same paste as Lake Jackson Plain, and also has Safety Harbor Incised with the same paste as Pinellas Incised.

Lake Jackson Plain is defined on the basis of rim sherds and appendage sherds; associated body sherds are placed in the residual plain category. In our analysis four sub-types were used, as follows: Sub-type A. 21 pinched rims (Fig. 37, *19*). Sub-type B. Characterized by nodes placed on the rim, 45 sherds (Fig. 37, *20*). Sub-type C. Characterized by handles, both loop and strap, and some with nodes on the handle, 74 sherds (Fig. 37, *21-23*). Sub-type D. Notched lips and miscellaneous features, 52 sherds (Fig. 37, *24-30*).

Lake Jackson Fingernail Impressed. This is a tentative type based on six sherds, which, however, are all from different vessels. The paste is the coarse, lumpy kind noted above for Lake Jackson Plain and Pinellas Incised. The decoration consists of large punctations applied with the fingernail and tip of the finger, and cover the entire area of each sherd seen. On one specimen an incised line is seen at one edge. Two of the sherds are rim sherds, one has a flattened lip and the other one is sharply rounded. The sherds would seem to indicate rather deep vessels with slightly outflaring rims. Specimens of this tentative type are shown in Figure 38, *14-15*.

Marsh Island Incised. Willey has named this type and given a brief description of it, based on very limited data (Willey, 1949, p. 466). The following description is based on Willey's remarks and 102 sherds from the Lake Jackson site. The ware characteristics are as in Lake Jackson Plain. Decoration is by incision, fine to medium-bold in sub-types A and B and bold in sub-type C. These sub-types are divided as follows: Sub-type A. Filled triangles and sometimes chevrons, 16 sherds (Fig. 38, *2-3*). Sub-type B. Vertical parallel lines, 20 sherds (Fig. 38, *1*). Sub-type C. Diagonally placed parallel lines, 66 sherds (Fig. 38, *4-5*). Sub-types A and B have the design confined to a band on the upper part of the vessel; in sub-type C this may extend farther down on the body. Open bowls and amphoras with some neck constriction and slightly flaring rims are forms suggested by the sherds. Several rim sherds decorated on the inside suggest either plate forms or flaring rims. Rims are either outflaring or incurving depending upon vessel shape, and most rims are thinned although the opposite does occur. Loop handles are present in sub-type C.

Alachua Cob-marked. There were ten sherds from the site which may be classified as Alachua Cob-marked, a type defined by Goggin (Goggin, 1948, p. 3). Six of these vary from the type description in having yellowish-tan outer surfaces. One specimen has a strap handle, sharply angled (Fig. 38, 9).

Red-filmed sherds. No type name is given the nine sherds which displayed red filming on one of their surfaces. One of these was apparently painted on the outside, the remainder were very definitely painted on the inside. The paste is like that of the majority of the sherds at the site.

Check-stamped pottery. A total of nine check-stamped sherds was noted. These are all marked with rectangular checks with the lands on the long side of the rectangles more prominent than the cross lands (Fig. 38, *13*). Check size ranges from 2 to 7 mm. in the long dimension. The four rim sherds in the group have the stamping applied diagonally to the lip.

Jefferson Stamped. Three small sherds of Jefferson Stamped type C were found (Smith, 1948, p. 317, Pl. 32h). There was also one Jefferson-like rim sherd.

Brushed pottery. There were six sherds with brushed outer surfaces. Some of these are similar to, but not identical with, Chattaboochee Brushed as now defined (Bullen, 1950, p. 103).

Shell tempered pottery. Twelve sherds of shell tempered pottery were found at the site. Ten of these were plain and two were incised. One of the incised sherds is marked with a single straight line. The other has a straight rim with lip notching, and the apparent globular body has parallel diagonal incised lines (Fig. 38, 8). These sherds may probably be classified as Pensacola Plain and Pensacola Incised (Willey, 1949, pp. 463-464).

Miscellaneous decorated. There were over 150 sherds which were grouped into a category of miscellaneous decorated. Almost all of these are specimens in which fragmentary incised lines are visible on the sherd, but which cannot be placed in any type because of the incomplete nature of the evidence. Four of the more unusual examples are discussed here. Figure 38, *11* shows a finely incised sherd on a compact, fine sand tempered paste with flecks of mica visible on the surfaces. Figure, 38, *17*, on a Fort Walton paste, is a portion of a bottleneck decorated with wavy lines. Figure 38, *16*, on a coarse paste like Lake Jackson Plain and Pinellas Incised, is decorated with rows of hollow reed punctations. Figure 38, *10*, on a sand tempered paste is somewhat reminiscent of Aucilla Incised of the Leon-Jefferson Period (Smith, 1948, p. 317).

Residual Plain. In this category are grouped the vast bulk of sherds from the site. These are the plain body sherds of the types mentioned above, particularly the more numerous types. The paste range covers that of the types Fort Walton Incised, Pinellas Incised and Lake Jackson Plain.

DIVISION INTO CERAMIC GROUPS

As analysis was undertaken it soon became apparent that there was little chance of vertical stratigraphy being disclosed by the tests. The plowing, planting and pitting had churned the deposit to the extent that stratigraphy, if it had existed at the site, had become obscured. Therefore, an attempt was made to examine the materials from the point of view of horizontal distribution.

A comparison of the two decorated types which occurred with the greatest frequency, Fort Walton Incised A and Pinellas Incised B, led one to suspect that they might not be contemporaneous. The paste of Fort Walton A tended toward the fine end of the range, while Pinellas Incised B tended toward the coarse. Nodes and handles, present on Pinellas Incised B, were absent on Fort Walton Incised A, while the opposite held true for the long folded rims. Lip notching was present on the Pinellas sherds, but not on the Fort Walton. With this suspicion of non-contemporaneity in mind, an analysis was run with the two types serving as a basis.

The contents of each excavated square in the village area were examined, and the numbers of the two types noted. It was found that there was great variation in the percentage ratio of the types to each other in these various squares. Expressed in terms of the percent of Fort Walton Incised A to a total combining Fort Walton Incised A and Pinellas Incised B, the following was found to be true:

	Percent of Ft. Walton A				
	0-19	20-39	40-59	60-79	80-100
Number of Squares	11	14	23	19	15
No. Ft. Walton A	1	35	64	61	50
No. Pinellas B	18	77	63	30	3

This analysis, when plotted on a map of the excavated area as in Figure 39, suggested that there was some horizontal grouping of types in the ground since there were blocks of contiguous squares with similar type ratios. When this observation was made the various pottery types for each square were tabulated and grouped in five columns on the basis of the ratio of the two most common types. The results of this tabulation are given in Table 9.

The percentages under the number of sherds in Table 9 are the percentage of that type found in each of the columns. It will be immediately noted that Fort Walton Incised A and Pinellas Incised B disclose reversed trends, but this is to be expected since they are the types on which the table is based. Of more significance are some of the other types which show an association with these two types, and these will be discussed below.

TABLE 9. SHERD COUNT IN RELATION TO HORIZON DISTRIBUTION OF TWO MAJOR POTTERY TYPES

Pottery Type	Percent of Fort Walton Incised A of a Total Combining Fort Walton Incised A and Pinellas Incised B Sherds					Total Sherds
	80-100%	60-79%	40-59%	20-39%	0-19%	
Ft. Walton Incised A	90	61	64	35	1	211
	31.45%	27.70	21.14	16.22	1.35	
Pinellas Incised B	3	30	63	77	18	191
	1.89%	13.60	20.20	29.10	24.30	
Ft. Walton Incised B	2	1	2	8		13
	1.26%	.45	.64	3.02		
Safety Harbor Inc.	3	6	6	6		21
	1.89%	2.73	1.92	2.26		
Pinellas Incised A	20	21	15	14	2	72
	12.58%	9.54	4.81	5.28	2.70	
Pinellas Incised C	3	3	5	10	2	23
	5.03%	8.63	8.07	6.04	8.11	
Lake Jackson Plain A	4	2	7	6	2	21
	2.54%	.91	2.24	2.26	2.70	
Lake Jackson Plain B	3	8	12	19	3	45
	1.89%	3.64	3.84	7.17	4.06	
Lake Jackson Plain C	8	19	25	16	6	74
	5.03%	8.63	8.07	6.04	8.11	
Lake Jackson Plain D	8	4	13	18	9	52
	5.03%	1.82	4.19	6.79	12.16	
Marsh Island Inc. A	7		5	4		16
	4.4%		1.6	1.51		
Marsh Island Inc. B	1	6	8	4	1	20
	.63%	2.73	2.56	1.51	1.35	
Marsh Island Inc. C	10	17	17	10	8	62
	6.29%	7.73	5.45	3.77	10.08	
Other Decorated	37	42	68	38	22	207
	23.3%	19.1	22.4	14.34	29.7	
Total Decorated Sherds	159	220	310	265	74	1028
Total Residual Plain Sherds	960	1686	1853	1634	610	6743
Grand Total	1119	1906	2163	1899	684	7771

Marsh Island Incised A and B show some tendency to correlate with the end of the range dominated by Fort Walton Incised A, and Pinellas Incised A is strongly in this direction. Associated rather strongly with Pinellas Incised B are the types Pinellas Incised C, Lake Jackson Plain B and D, and Marsh Island Incised C. The rest of the types do not give clear cut suggestions of association.

We have, therefore, tentatively defined two groups of pottery types from the Lake Jackson site which disclose some evidence in the form of horizontal distribution of being non-contemporaneous complexes. A word of caution, to be reiterated later, may be inserted at this point. These groups are abstracted from the mass of material, and are not necessarily mutually exclusive; i.e., they do not necessarily represent two successive occupations with a time interval between. In fact, it seems more probable that what we have done is to abstract two points on a continuum. In either case, the evidence given above does not suggest which of the groups is earlier or later in time, and for a discussion of this we must pass on to another type of analysis.

TYPOLOGICAL SERIATION

Fort Walton Incised A, with its incised outlines and punctate filling, resembles the techniques of Weeden Island Incised of the preceding time period. It can be regarded as a descendant of this earlier type, and it will be remembered that it possesses the folded rims which are also found in Weeden Island pottery. Marsh Island Incised A and B, which correlate with the Fort Walton Incised A pottery, are quite obvious descendants of the type Carrabelle Incised of the Weeden Island Period. Of the entire group correlating with Fort Walton Incised A, Pinellas Incised A would seem to be the most divergent, but closer examination discloses a possible Weeden Island prototype. It will be remembered that Pinellas Incised A is characterized by punctate bordered arcades around the vessel. In certain Weeden Island Incised vessels figured by Moore we see arched areas repeating around the vessel, usually filled with cross-hatched or herringbone incision (Moore, 1901, Fig. 63; Moore, 1902, Figs. 29, 69, 75, 264; Moore, 1918, Fig. 4). In one instance the arch

or arcade is bordered by punctation (Moore, 1902, Fig. 115). In summary, we can readily derive all of the types definitely associated with Fort Walton Incised A from Weeden Island types.

On the other hand, neither Pinellas Incised B nor the types associated with it can be so derived. Certain of the types show a good relationship to one another, however. The same treatment of notched lips, nodes and handles occurs on Pinellas Incised and Lake Jackson Plain types, as well as on Marsh Island C. Pinellas Incised B and C may well be outgrowths of the general tradition of Pinellas Incised A. Marsh Island C may be an outgrowth of the other Marsh Island Incised types.

Looking at the period which follows Fort Walton we see some continuity into Leon-Jefferson times. Some of the Leon-Jefferson Period pottery called Fort Walton Incised by Smith (Smith, 1948, Pl. 32 e) is really a continuation of Pinellas Incised A. Aucilla Incised (Smith, 1948, p. 317, Pl. 32 a-d) apparently comes out of the Pinellas tradition, and some of the Lake Jackson Plain rims and lips remind one of the Jefferson rims.

If one is looking for a time direction in the data suggested by the groups of pottery types, the obvious relation of one group to the earlier Weeden Island Period, and the greater similarity of the other group to the ensuing Leon-Jefferson Period would suggest that Fort Walton Incised A and its associated types are earlier than Pinellas Incised B and its associated types.

The few sherds collected during the clearing of the top of Mound 4 give some slight supporting evidence for this postulated sequence. These sherds were one Pinellas Incised A, one Pinellas Incised C, one Lake Jackson Plain B, one Lake Jackson Plain C, one miscellaneous incised, and four residual plain. This small group of sherds tends toward the postulated late end of our range, with the possible exception of the Pinellas Incised A.

EVIDENCE FROM OTHER SITES

There is some evidence from other sites which suggests that the temporal interpretation derived from typological seriation is the correct one, but it must be remembered when discussing these sites that they, like Lake Jackson, may not represent merely one end or the other of the time range, but may, rather, be mixed, a condition unlikely to have been noted in the excavations of C. B. Moore, from whom our data comes.

The cemetery near Point Washington contained relatively little Fort Walton Incised A compared to other Fort Walton Incised and Point Washington Incised. There is also a Lake Jackson Plain D vessel. European goods were found at this site (Moore, 1901, pp. 472-496).

At a mound at Bear Point on Perido Bay, just across the state line into Alabama, Moore found no punctate filled Fort Walton Incised. The pottery is mostly Point Washington Incised or non-punctated Fort Walton Incised. A considerable amount of trade goods was found at this site, including a coin identified as having been struck between 1521 and 1550 (Moore, 1901, pp. 423-432).

Moore's mound near Chipola Cutoff contained both Weeden Island and Fort Walton materials. The Fort Walton material seems to be about equally divided between types associated with both ends of the Lake Jackson range, and possibly covers the same time range as the Lake Jackson site. Some European trade material was found at this site (Moore, 1903, pp. 445-466).

At the Marsh Island site Moore found the bones of an infant in a Marsh Island Incised A vessel, covered with a Marsh Island Incised C vessel. A bracelet of sheet brass encircled each humerus. Other historic materials occurred with burials in the top portion of the mound; the lower portion was Weeden Island (Moore, 1902, pp. 274-281).

Materials from a site in the St. Marks National Wildlife Refuge have been described by both Goggin and the author (Goggin, 1947 and Griffin, 1947). This site contains considerable European material. Only a few sherds giving indication of time period were found in the surface collections. Some of these indicated a possible Santa Rosa-Swift Creek and/or Weeden Island occupation, which would be too early for the historic goods. Four sherds of incised pottery were found which can be attributed to the Fort Walton Period; two of these are rather nondescript and the other two, called Fort Walton Incised in earlier reports, are in reality Pinellas Incised B. Two Lake Jackson Plain

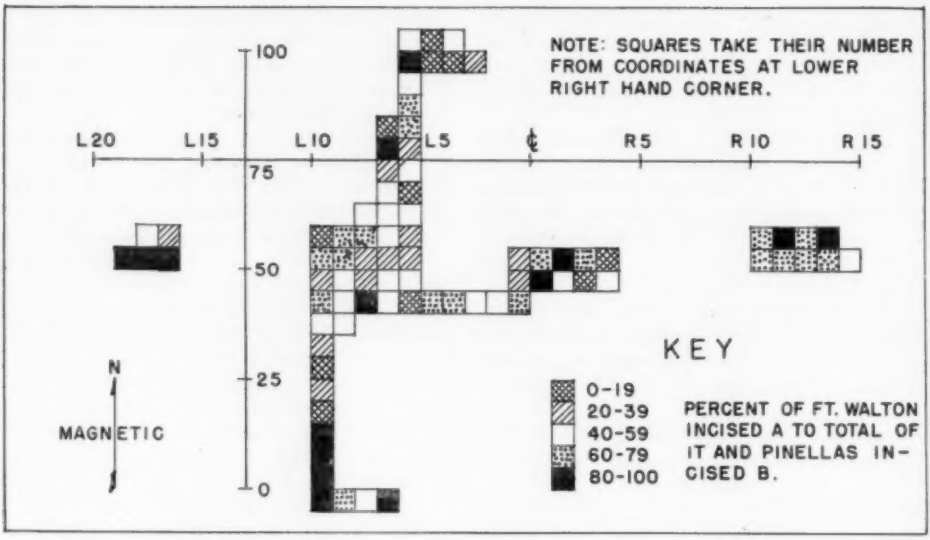

FIG. 39. Map of part of Lake Jackson site showing proportions of Ft. Walton Incised sub-type A and Pinellas Incised sub-type B to each other.

A rim sherds are also present. While the evidence is inconclusive and meagre, this site would seem to show an association between European goods and the late end of our range.

At Jolly Bay Moore found very little Fort Walton Incised A, but Pinellas Incised B and C seem to have been rather common (Moore, 1901, pp. 459-465). No trade goods were found, but the site would seem to be toward the late end of the Lake Jackson range.

The Fort Walton site itself yielded no trade goods. At this site there is a considerable amount of Fort Walton Incised A, which with a Pinellas Incised A vessel would indicate the earlier part of our time range. In lesser quantity Pinellas Incised B and C were found (Moore, 1901, pp. 435-454).

These scanty data would seem to indicate that in general the Fort Walton Incised A vessels are rare in sites containing trade goods, and that, conversely, Pinellas Incised vessels are rather common in these situations. This may be taken as supporting the postulation based on typological seriation.

SUMMARY OF LAKE JACKSON SITE

Analysis revealed that two groups of pottery types could be isolated at the Lake Jackson site, although the division was not clear cut, and it was not possible to place all types in one group or the other. It is postulated that we have actually abstracted two points on a cultural continuum, rather than having isolated two distinct superimposed manifestations.

Unfortunately it is impossible to assign the few artifacts recovered to one or the other of these groupings, although in some cases they do add to the known complex for the Fort Walton Period in general.

The site itself gives evidence of a large village possessing pyramidal mounds built in stages, and there is evidence of a plaza area between some of the mounds. No evidence of house form was recovered.

Other sites discussed contained European trade goods in a context similar to the late end of the Lake Jackson time range, but no historic goods were found at Lake Jackson. Before attributing a prehistoric date to the site, however, we should remember that Moore's information, as well as that from the St. Marks National Wildlife Refuge, comes from burial sites, whereas the Lake Jackson information comes from a village site excavation. It is entirely possible that in early contact days material might find its way into burial places and not appear in the village debris. The pos-

sibility that the Lake Jackson site extends into the historic period is particularly interesting in view of the fact that it is, on other grounds, one of the candidates for identification as Iniahica, the chief village of the province of Apalachee, where De Soto wintered in 1539-40 (Swanton, 1939, p. 158). The Lake Jackson site is by far the largest in the area, which increases the possibility that it may have been the major Apalachee village of De Soto's time, but positive identification cannot be made at this time.

THE FORT WALTON PERIOD

The Fort Walton Period was defined by Willey and Woodbury in 1942, and covered the late prehistoric and early historic sites on the northwest Florida coast which follow the Weeden Island Period in time (Willey and Woodbury, 1942). Since this definition of the period, Hale G. Smith has defined the Leon-Jefferson Period in the same area to cover the sites of the Spanish mission era (Smith 1948). In terms of dating at present employed Weeden Island ends at approximately 1450 A. D. Fort Walton extends from this date until 1600 or later, and Leon-Jefferson runs from 1600 or 1650 to at least 1704, the date at which most of the settlements in the area were either destroyed by the British and their Creek Indian allies, or were abandoned by the occupants because of the inroads of these invaders.

Of course, these datings must not be taken as absolute. Rather, the picture seems to be one of culture change in a more or less continuous manner, with the archaeological periods abstracted from the stream of change.

Fort Walton is set apart from Weeden Island not only by different pottery types and artifacts, but by a series of more fundamental changes in the cultural tradition. Agriculture became more intensive, villages became larger, burial in mounds was largely abandoned and cemetery burial took its place, large earthen pyramidal mounds were constructed, and in general we see differences which reflect profound social and cultural changes. The source of these changes is to be found in the adjacent parts of the Southeast in the cultural tradition which we know as Middle Mississippi.

So long as we considered Fort Walton as a single block in the chronological chart, the differences between it and Weeden Island appeared to represent a rather sharp break, as compared for example with the differences between Weeden Island and the preceding Santa Rosa–Swift Creek Period. In fact, the break was almost sharp enough that movement of peoples into the area could be postulated without difficulty.

The major contribution of the excavations at the Lake Jackson site was the suggestion of successive stages within the Fort Walton Period. As we have seen, the pottery of the earlier part of the time range can be derived from Weeden Island types, under the influence of Mississippian ideas, and the later stage can be at least in part derived from the earlier, with perhaps stronger influences from Mississippian centers at this time. A process of culture change can, therefore, be deduced from the Fort Walton data from Lake Jackson.

The transition from Fort Walton to Leon-Jefferson is not so well known, but we may suspect that it too is the result of continued culture change, perhaps accelerated by Spanish missionization. At least it is certain that in the Tallahassee area most of the villages were occupied by lineal descendants of the Indians present in De Soto's time. A few sherds of Leon-Jefferson types were found at Lake Jackson.

While this paper has suggested stages within the period at the Lake Jackson site, caution should be exercised in extending the results to other sites any distance away. Lake Jackson is in the territory of the Apalachee, which extended from the Aucilla River to the Ochlochnee. West of this latter river were several other Indian groups, and while, culturally, they seem to have been rather closely related, there may be areal differences which at the moment escape our notice. East of the Aucilla River lies Timucua territory, and the detailed picture in this area remains to be worked out.

With the information contained in this paper at our disposal it should be possible to return to the Lake Jackson site with some knowledge of the conditions to be expected, and to work toward the solution of other problems which will result in fuller knowledge of the Fort Walton Period.[2]

[2] See Willey, 1949, pp. 452-470, for an excellent summary of the Fort Walton Period which appeared subsequent to the preparation of this paper.

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Florida Park Service
Gainesville, Florida
November, 1949

AN ARCHAEOLOGICAL SURVEY OF THE BENHAM FALLS RESERVOIR, OREGON

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FEW of the smaller proposed or authorized reservoir sites examined by River Basin Survey teams in the Northwest have yielded archaeological sites suitable for excavation. In some of them, however, the surveying parties have found extensive surface indications and made collections which are in themselves worthy of study and reporting. The Benham Falls Reservoir is in this latter class; indeed, it is the only reservoir area in which no sites were found which warranted excavation and yet which exhibited extensive evidence of aboriginal use and yielded a fair surface collection. Consequently the data which resulted from the survey work are sufficient to justify their being made generally available. This is seen to be doubly true when it is recalled that no previous work has been done in the area.

This region under study lies in Deschutes County, some 18 miles south of Bend. The

[1] This paper is published with the consent of the Smithsonian Institution. I wish to thank Dr. Frank H. H. Roberts, Jr., for granting this permission. The proposed reservoir was surveyed during the last days of June and the first week of July, 1948, by George Coale (University of Southern California), Francis and Harry Riddell (University of California) and the writer, all employed by River Basin Surveys. The work was done in accordance with the "Memorandum of Understanding between the Smithsonian Institution and the National Park Service," approved October 9, 1945. The survey parties were aided by maps supplied by the U. S. Forest Service Office, Bend, Oregon.

proposed reservoir, a project of the Bureau of Reclamation, will be approximately 14 miles long and will vary from ½ to 4 miles in width.

Freeman, Forrester and Lupher (1945, p. 75), the latest students of the physiography of the Columbia Plateau, or Columbia Intermontane Province as they have renamed it, place the Bend area in the extreme western part of the High Lava Plains Subprovince, Harney-High Desert section. This is essentially a transitional zone between the Great Basin and the Columbia Intermontane Province on the one hand and the Basin and the Cascade Mountains on the other. The Deschutes River above Bend, however, crowds closely along the eastern foot of the Cascades. It is the first major drainage feature east of them, and the canyon that it has cut in the Pliocene lavas, for part of its course, adds to the magnitude of its physiographic importance. The Deschutes valley is thus not typical of the Harney-High Desert section, which resembles the Great Basin. The lavas act as a vast storehouse of underground water and the Deschutes is a flowing stream even during the dry season. Large springs contribute to this and supply excellent water. Above Bend, and to within something less than 1½ miles of the forks (Fig. 40), the river flows in deep sweeping meanders cut into basalt or andesite lavas or into the unconsolidated foothill material east of the Cascades. Above the forks for a short distance on the West Fork, and throughout the remainder of the reservoir along the East Fork, the rivers meander through wide meadows. This floodplain supports extensive grasslands, thickets of alder and willow and frequent marshes. The fringing sandy terraces above the floodplains are covered with extensive growths of jackpine and some yellow pine. The forests above the rivers are thus mesophytic while the floodplain flora exhibits plant types more dependent upon a regular water supply. All in all, a subhumid type of climate exists. Only Recent or apparently Recent sediments were seen in association with archaeological manifestations.

The work done by Murdock and Blyth (Ray, et al, 1938, pp. 396-405) did not, apparently, result in designations of the Indian (presumably Paiute) bands which roamed the Upper Deschutes. Although the area was within the Northern or Oregon Paiute Range it was marked as unoccupied on their map (p. 396). Stewart (1939, map and pp. 131, 132) also draws his boundary lines of the Northern Paiute bands, the Yahuskin and Hunipui, so that the upper Deschutes area is excluded from their range. In spite of the lack of ethnological reference to Paiutes in the Benham Falls region I have little doubt that it lay, at one time, within the region utilized by their far-flung bands. More generalized tribal maps, of course, allot the area to them.

No trade material was found on any of the camp sites and most of the artifacts had a slight, and probably quickly formed, patina. A strong but probably unprovable impression arises on handling the artifacts that much of the material in our collection is not as recent as that which one would find on the surface of most Columbia Plateau sites, especially those to the north along the Columbia River and its larger tributaries. This apparent age would jibe well with a lack of ethnological reference and would, in turn, support the thesis of Ray, et al (1938) that the Paiute were more often than not raided and harried by the Sahaptins. This is, of course, in opposition to Berreman's (1937) suggestions that the Paiute were not only encroaching upon Sahaptin holdings along the Columbia but were in a fair way to expel the latter from the south bank of that river. Were the Paiute in recent control of this area, along with most of the better hunting grounds south of the Columbia, one would expect recent ethnological references and more obvious archaeological traces.

The Deschutes Valley is even now an excellent hunting and fishing area and the meadows must have yielded well to the digging stick and gathering basket. There are fresh water mussels in the river. These factors, together with the ease with which the river could have been ascended from the north, may well have made it a favorite haunt of hunting and slave raiding parties from the Tenino and other tribes to the north and have eventually contributed to its depopulation in historic times.

While much of the previous two paragraphs is speculative, it adds to and is in accordance with the well-established position taken by Ray and his co-authors (1938). That the area has been listed on maps as belonging to northern tribes such as the Tenino (Kroeber, 1939) and the Molala (Berreman, 1937) is a point in support of the thesis that favors the military

FIG. 40. Site map.

preponderance of the Sahaptins over the Paiutes. Too, it would seem more logical that the Columbia River tribes would have pushed the inhabitants out of this section of the Deschutes Valley or rendered their tenancy there insecure than that the latter should have completely abandoned these excellent hunting grounds for the environs of the larger river, especially if the new area was to be held only through the dubious fortunes of war. Perhaps records of bands of Paiutes living in this area, which have escaped the students of that group, can be found which will make unnecessary much of the above speculation.

Study of Figure 40 shows three site concentrations of somewhat different orders. The first includes the area of confluence of the East and West Forks of the Deschutes and extends downstream about to the limits of the survey. This is an area of wide meadows and fine hunting and fishing grounds. Several excellent springs emerge and flow into the river from the west. The second concentration is up the West Fork where sites 15, 16 and 17 are grouped around the confluence of Fall River and the West Fork of the Deschutes. The third concentration is well up the East Fork. There a rather high terrace overlooks the broad valley and meadows formed by the confluence of the East Fork and Paulina Creek.

Almost without exception the sites throughout the reservoir were located on the first gravelly terrace above the floodplain—or second bottom, as it would be called in other parts of the country—or on its remnants within the floodplain. A few were on the second terrace above the floodplain. This concentration may be more apparent than real because of the difficulty of locating archaeological evidence in the grassy meadows of the floodplain itself. The sites are in sandy locations with fairly extensive views up and down the valley. By today's standards the locations are desirable living sites.

With only a partial exception, all sites were superficial. They were camps marked by a surface scattering of chips, spalls, and rare implements or fragments. Midden, with one possible exception, was absent. The exception, 35-DS-5, showed bits of charcoal at about the depth of one foot in the soil accumulation at the foot of a low basaltic cliff near the river. As it lay outside the reservoir limits, this site, as well as 4 and 6, did not receive much attention. There was little variation within the sites themselves; some were larger or were more thickly sown with the discards of obsidian chipping but, in general, they offered evidence of only the most superficial occupation. Their extent up and down the banks of the river or of a marshy cut-off was usually several times their width. From the above, the obvious deduction is that the area was inhabited only sparsely, presumably by small gathering and hunting bands, which set up temporary camps in preferred spots along the river. Their existence may well have been transhumanic, ranging from the semi-desert to the east of the Deschutes to and into the mountains to the west. No caves, burials, petroglyphs or older deposits were located.

THE ARTIFACTS

Only 138 artifacts were collected; of these 61 were points, knives, or blades or fragments of such implements. Eleven were scrapers, choppers or chopping-scrapers and 4 were objects of ground or pecked stone. The remainder were retouched flakes, flake knives, or unidentifiable chipped fragments. A few bits of shell (local river mussel) were found on the upriver sites 28, 29, and 30. The artifacts, with the exceptions of the ground objects, one chalcedony chip, one small broken point from site 1, and the jasper chalcedony knife or spear (Fig. 41*a*, *15*) were of fine black obsidian (with one piece of red and black obsidian) or of a poorer grade often called glassy basalt or, in the case of a few scrapers or choppers, of fine-grained basalt. Obviously such material would be common and preferred in a volcanic region.

A count of artifacts found at the various sites makes it possible to grade the sites into three categories: those from which good, fair and poor collections were taken. The first category has two sites: 1 and 7 with 26 and 18 catalog numbers respectively. The second contains five sites: 2, 5, 8, 21, and 29 with collections varying from 3 excellent artifacts at 21 to 10 pieces at 29. The remaining sites were poor yielders. It will be noted that all but one of the sites in the first two categories, the extensive 29 at the mouth of Paulina Creek, were grouped along the river below the confluence of the two Forks or shortly upstream from it. This strengthens the impression gained from the site pattern, and from

an examination of the ground, that the broad, low meadows of that part of the valley made the best hunting, gathering, and camping grounds.

Inasmuch as the small collection under discussion is entirely from the surface, the only apparent method of determining a sequence for it is to separate the artifacts from sites in the immediate floodplain or nearer the river and therefore, presumably, recently habitable, from those situated on the terraces above the floodplain or along the edges of cut-off meanders, now often sloughs, which mark the positions of the old river bed. Sites in the latter locations might have been associated with older but not necessarily ancient fluvial manifestations. Immediately below is a list of the sites in the possible older category, together with the specimens found on them which are sufficiently whole for study.

Site	*Specimens as shown in Fig. 41a*
DS- 2	No. *11*, 33, *37*
6	none
8	No. *13*, *26* and mortar (*Fig. 41b*, 3)
9	one similar to but larger than *19*
10	No. *15*, *16*, one similar to *7*
19	No. *20*
20	none
21	No. 36, one same type as *23*
25	chips only
27	none
29	No. *7*, 35, one same type as *22*
31	none
32	No. *34*

Sites 8, 9 and 10 were all grouped around a large spring and its run-off channel into the Deschutes. It is not possible, therefore, to assign any signifiance to their position.

Certainly some of the types of artifacts illustrated were found on sites which are assuredly late and also on those which may be earlier. Specimens resembling figure 41*a*, *7* were found at both sites DS-10 and 29; types exemplified by Figure 41*a*, *22* and *23* were found at sites which may be recent or may have some antiquity. Figure 41*a*, *11* shows excellent diagonal chipping but is fragmentary and cannot, thus, support discussion. It will be noted, however, that Figure 41*a*, 33 through *37*, all rather unusual forms, are from sites which I have tentatively suggested may be correlated with earlier positions of the river. While I do not give great weight to the fact, it should be noted that they all carry a thin but generally all-over patina. There does exist, then, a certain amount of circumstantial evidence favoring chronological differences.

The mano or large rubbing stone (Fig. 41*b*, *1*) varies between 1½ and 1¾ inches thick. In spite of its size it weighs only 1½ pounds. The lava is highly vesicular, hard and abrasive. The crude pestle (2 pounds and 14 oz.) of dense gray basalt (Fig. 41*b*, *2*) is in no way unusual or diagnostic. The bowl or mortar fragment (Fig. 41*b*, 3) was examined by Dr. E. M. Baldwin, Assistant Professor of Geology of the University of Oregon, who stated that the piece is made of the probably Pliocene Cascade andesite (often called basalt). It was therefore almost certainly locally made. The interior surface is smoothed through use. It may have been deliberately broken; at least one piece has been broken outward from the interior of the bottom.

All specimens mentioned in the discussion below are obsidian unless otherwise stated. Figure 41*a*, *1-4*, *8*, *9*, *10*, *13*, *14*, *20*, *25*, *29*, and *30* are probably scrapers or cutting edges. Most of them, even the large, fine basalt flake with retouched edges, are suitable for use unhafted as either scraper or knife. The range of forms in the knife-scraper category is well illustrated by Figure 41*a*, *1* to 5. A tabulation of sites and their artifact yields follows:

Site	*Specimens as shown in Fig. 41a*
DS- 1	5 blades or fragments of knives or scrapers, chips
2	2 pcs. similar to *2* and one to 3
3	1 blade pc., 1 broken scraper similar to 8 and 2 chipped fragments
4	2 broken pieces, blades
7	1 broken blade, same as 5, and 2 pieces of blades like *1*, but heavier
8	6 broken fragments of blade
9	base of blade like 5
10	pc. of blade similar to *1*
12	pc. of artifact similar to *2* and one like 3
14	2 blades like *2* or 4, but heavier and longer
15	1 pc. like *1* and one like 5, but triangular
19	1 pc. like *1*, broken
22	1 pc. small blade probably like 6
23	1 pc. small blade probably like 6
24	1 pc. small blade probably like 6
25	1 pc. like *1*
29	2 pcs. blades probably like 5
31	1 pc. of artifact similar to 6

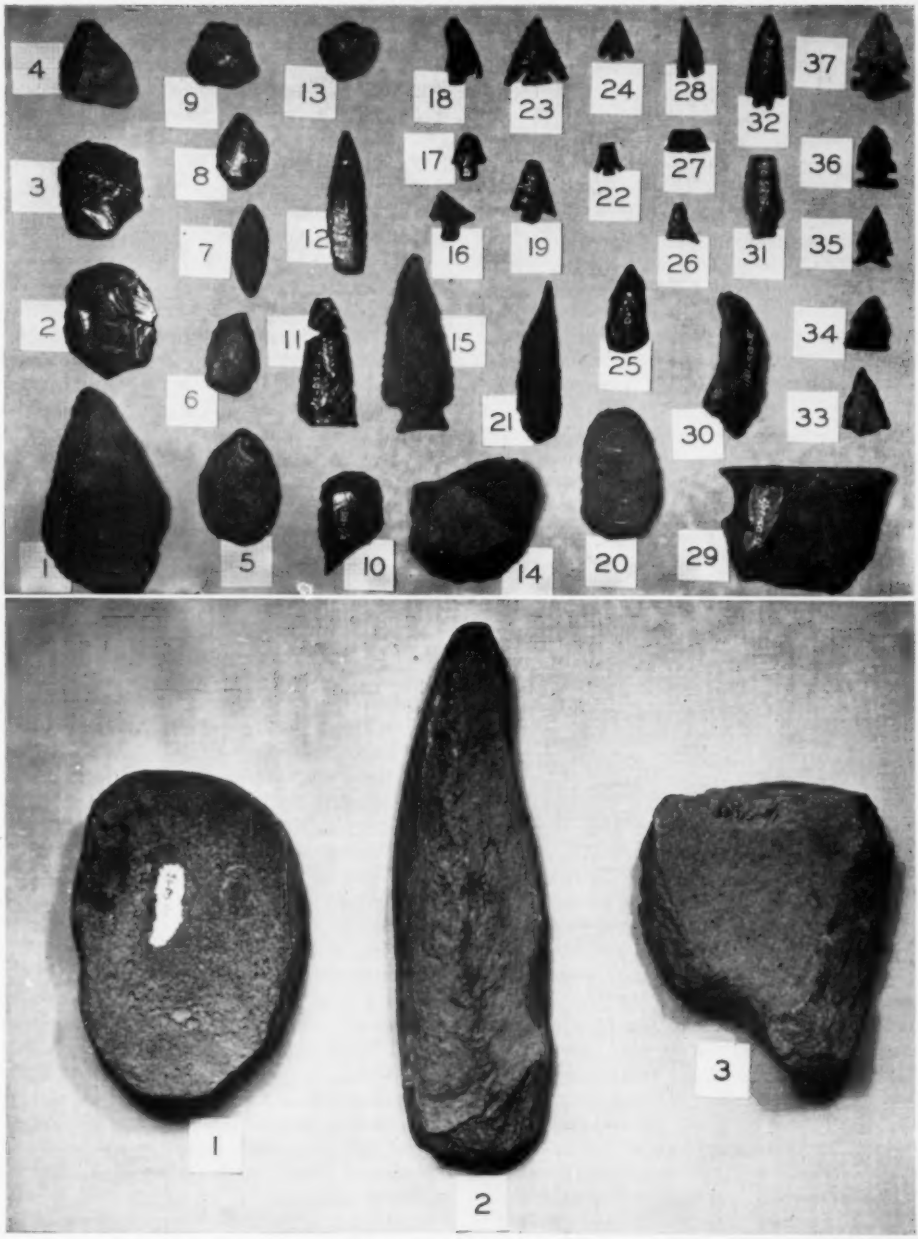

FIG. 41, *a*. 1, 35-DS-5/2 [cat. no. = Oregon (35 in alphabetical sequence) — Deschutes County (DS) — 5 (arbitrary site number) /2 (arbitrary artifact no.)]. *2*, 35-DS-1/3a. *3*, DS-6/1. *4*, DS-1/3b. *5*, 7/5. *6*, 13/1. *7*, 29/2. *8*, 32/2. *9*, 3/1. *10*, 1/2. *11*, 21/2. *12*, 7/1. *13*, 8/3. *14*, 7/3. *15*, 10/1. *16*, 10/3. *17*, 1/1a. *18*, 7/2. *19*, 1/1b. *20*, 19/1. *21*, 26/1. *22*, 1/1c. *23*, 5/1. *24*, 1/1d. *25*, 7/3. *26*, 8/2. *27*, 7/12. *28*, 2/2. *29*, 20/2. *30*, 18/1. *31*, 7/2. *32*, 1/1c. *33*, 2/1. *34*, 32/1. *35*, 29/2. *36*, 25/1. *37*, 2/1. (Numbering Tags are 1 inch square.)

FIG. 41, *b*. 1, 35-DS-21/1. *2*, 0/1 (not found at a site). *3*, 8/1.

Objects such as Figure 41*a*, *2* and *3* were primarily knives. The irregularly oval and rounded, thick (average $^{2}/_{5}$ inch) scrapers, in Figure 41*a*, *4*, *9*, and *13*, are all, as were most of the previously mentioned scrapers, primarily percussion chipped. They were then secondarily retouched by pressure flaking. Figure 41*a*, *8* is a plane-bottomed scraper with a single-beveled edge; Figure 41*a*, *10*, a broken flake, has a similar end-scraper type single-beveled bit. Figure 41*a*, *25* is a small, well-chipped plano-convex end-scraper with the same type of bit. The large flake, Figure 41*a*, *30*, fairly well patinated, has been retouched along the longer right edge. Three others of the same type came from site 18, one from site 22. It is unfortunate that the large, thin blade, *29* of Figure 41*a*, is broken. It is of greenish glassy basalt. The large notch at the right is probably not a part of the original outline. The heavy duty basalt chopper or crude scraper, *14*, is wholly percussion chipped. One of the same type was found at site 1; another, nearly oval, at site 5. As has been shown, blades such as *5* and *1* of Figure 41*a* (gray glassy basalt) were not rare. Figure 41*a*, *21* is probably a drill. Only two oval points of the type shown in Figure 41*a*, *7* were collected. Figure 41*a*, *12* (glassy basalt) is a fine variation of the preceding oval form. The brown flint or jasper spear point or knife, Figure 41*a*, *15* is unique in the collection, although some of the broken smaller points may have had similar outline. The knife, Figure 41*a*, *11*, illustrates the only artifact with fine diagonal ripple-flaking that was found. Two broken tips, possibly of similar points, were gathered at site 1. The three points shown by *16*, *17*, and *19* of Figure 41*a*, all fairly well patinated, form a well-represented type. Although not symmetrical, all have square-cut shoulders and rectangular stems. Site 1 yielded one more of the same variety made of nearly white flint; one was found at site 6; at site 8, one broken and larger; at site 20, one with a rounded stem. Two thin broken points, *18* and *28* of Figure 41*a*, should be grouped as basally-notched while such types as are represented by *22*, *23*, and *24* of Figure 41*a*, are intermediate between the basal-notched and corner-notched. Specimens of the type represented by Figure 41*a*, *18* came from site 1 and from 17. Figure 41*a*, *22* is a small, fragile point; its variety is represented by two other examples all from site 1, and a single broken point from site 29. One similar to *23* of Figure 41*a* was found at site 7 and one at site 21; both were broken. The two triangular points, Figure 41*a*, *26* and *27*, are thin and fragile. Cressman has illustrated stemmed points with one elongated barb from Gold Hill (1933, p. 16, Pl. IV, 1) and Klamath Lake (1942, Fig. 98e). They are unusual but not rare.

The broken point, Figure 41*a*, *31*, is made of gray glassy basalt moderately patinated; a similar point came from site 7. Figure 41*a*, *32* is finely executed. Types similar to it but usually with a deeper basal notch and a greater flaring of the basal projection are not rare in the Northwest. The execution and proportions of all these points are altogether dissimilar to the Pinto varieties found to the south and east.

Nos. *33* to *37* of Figure 41*a* are of obsidian and are patinated. The extent of patination, which is not deep, may be judged by a comparison with the unpatinated surface of Figure 41*a*, *11*. All are from sites which may be rather early. The first has a decidedly weak development of the tang. This is thinned basally. The next is remarkably heavy, thick (¼ inch) and short. It may have had slightly barbed shoulders but the patina and smoothly worn surfaces of the point obscure chipping and breakage scars alike. Figure 41*a*, *35* is rather neatly executed and is not an unusual form in the Plateau. It is the least patinated of the group. The two side-notched points are unusual; Figure 41*a*, *37* would be a slightly larger replica of Figure 41*a*, *36* if it did not have a small basally thinned tang or stem exactly like that of Figure 41*a*, *33*.

Broken tips, broken points and retouched flakes were found on most of the sites. A small core chopper was found on site 5, and a broken drill or graver (?) on 10.

I have limited my comparative remarks to sections of the Plateau. The comparative material often indicates dissimilarities rather than likenesses. The Dalles–Deschutes report (Strong, et al, 1930), a logical place to look for resemblances, has fewer than might be expected but does yield more than were found elsewhere. The Benham Falls type illustrated in Figure 41*a*, *16*, *17*, and *19* would fit into Plate 14, *a*-*g*, or perhaps Plate 15 of the above report. The outline of the type is not rare. Strong's Plate 13, *f*, is similar to my *32* and *13*; his *c* is larger and cruder but similar to my *36*. The same is true of his 14cc and my *35*. There

appears to be a stronger tendency toward basal notching in the Benham Falls material than around the mouth of the Deschutes. No doubt the mortar fragment from DS-8 could have been found in the north (Strong, et al, Pl. 20, *e*).

The situation is not materially different with respect to the collections from Grand Coulee (Collier, et al, 1942). Here there are a few resemblances but fewer close similarities.

Cressman's (1936. Pl. IX, p. 30) Desert Lake material, as a whole, is reminiscent of that from Benham Falls. This is not surprising in view of the crudity of both complexes. There is a similarity in only one instance, his Plate IX, upper left, No. 3 of 3rd row is the same type as Benham Falls, Figure 41*a*, *32*. Cressman (1937) has reported on an early manifestation nearby: his Wikiup knives would have fitted into the collection under study. Unfortunately most of the blades from Benham Falls were broken. The same student found points similar to Figure 41*a*, *18*, *23*, *24*, and perhaps *22* and *28* at Roaring Springs Cave (Cressman, et al, 1940, Table II, p. 42). All of these might well be fitted into his generalized Type I. Figure 41*a*, *16*, *17*, and *19* are similar to his type 2, found throughout the deposit at Roaring Springs Cave while those which I have illustrated as Figure 41*a*, 35 and 36 conform roughly to his types 6 and 7. At Odell Lake, Cressman (1948) found another early manifestation which contains types similar to those from Benham Falls. The oval points and those described previously are similar in outline, his point *g* and my *31* of Figure 41*a*, his *c* and my *32*, Figure 41*a*, complete a surprising but altogether too short series of similarities. Cressman's Figure 94 (1942) may be similar to my *21*, Figure 41*a*. It is a type of artifact that is not too rare. If one omits from consideration the Benham Falls types of points shown in *22*, *23*, and *28* of Figure 41*a*, there is similarity in the facies of the collections from the Lower Klamath Lake (Cressman, et al., 1942, Fig. 98, *a*, *b*, *c*, *d*,) and from the Benham Falls basin.

This comparative discussion, and the reading which it entailed, has left the feeling that there is an elusive continuity or similarity in chipped forms from the early manifestations through to the later material from areas in the hinterland lying south of the main valley of the Columbia River. Two sites, excavated in 1948 by the Columbia Basin Archaeological Survey, River Basin Surveys, in the McNary Basin near Umatilla, Oregon, on the Columbia, one a contact site and the other probably largely just pre-contact, showed, however, entirely different forms. The collections from those two sites were more restricted than those made by Strong (1930) or by Collier (1942). A deeper and presumably earlier site from farther upriver near Cold Springs, excavated in 1949 by the River Basin Surveys in cooperation with the State College of Washington at Pullman, Oregon, yielded material, as yet unstudied, which may have southern affiliations.

There have been a few and will be further reservoir sites examined in the southern part of Oregon, east of the Deschutes drainage and in Paiute territory. It is doubtful if any of them will yield as well as did Benham Falls. When all are finished, however, the collections from them might well be considered together and comparatively with that discussed above. So far the archaeological evidence appears to supplement the ethno-historical picture as it has been outlined by the most recent students of the subject.

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February, 1950

RECONNAISSANCE NOTES ON THE SITE OF HUARI, NEAR AYACUCHO, PERU

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EVER since the late Julio C. Tello gave it a prominent place in his scheme of the development of Peruvian culture the great site of Huari (or Wari, as Tello always wrote it) has been a vexing problem in Andean archaeology. As was the case with so many of his explorations, Tello never published a report on his work at Huari and his general statements about what he found there leave the reader in considerable confusion. The authors of this paper took advantage of a flying trip over the Peruvian Central Highway made in 1946 to make a brief visit to Huari and came away with the feeling that even the small amount of fresh information they could contribute to archaeological knowledge would be worth reporting.[1]

Although it remained badly neglected until Tello became interested in it, the site of Huari was actually one of the first archaeological sites in Peru to be described in print, the ruins having been visited by Pedro de Cieza de León about 1548 and described by him under the name of Vinaque in his *Crónica del Perú* which was first published in 1554. He says:

> The greatest river [of those near Guamanga, modern Ayacucho] is called Vinaque, where there are some large and very ancient buildings, which, without doubt, because of their weathered and ruinous condition, must have lasted through many ages. Questioning the neighboring Indians as to who built that ancient site, they answer that it was other peoples bearded and white like ourselves, who, a long time before the rule of the Incas, are said to have come to this region and established their residence in it. And in regard to these and other ancient buildings in this country it seems to me that their plan is different from those which the Incas built or ordered built, for this building was square and Inca buildings are long and narrow. There is also a story that some writing was found on a stone slab of this building; this is a matter which I do not affirm any more than I deny that in my opinion some people might have come here in ancient times with the skill and ability to do these things and others which we do not see. (Cieza, *Crónica del Perú*, 1853, ch. 87, p. 434)

Cieza was quite right in saying that the architectural style of this great ruin is not Inca, and the observation does him no little credit, as does his cautious presentation of the local folklore about the ruins.

Later writers occasionally mention Vinaque, taking their information from Cieza with or without credit, such as Vázquez de Espinosa, Bk. IV, ch. 67, par. 1475 (1942, pp. 545-546; 1948, p. 506), Rivero and Tschudi (1853, p. 291), Ruíz Fowler (1924, pp. 15-16). Although

[1] The authors acknowledge their indebtedness to the following institutions which supported their 1946 field work: Chicago Natural History Museum (Collier); Peabody Museum, Harvard University (Rowe); and the Bureau of American Ethnology, Smithsonian Institution (Willey). Jeep transportation was provided by a grant from the Viking Fund to the Institute of Andean Research for the Virú Valley Program on which Collier and Willey were mainly engaged. We are also grateful to the Peruvian authorities in Lima for permitting the export of the surface collection, and, in a very special sense, to the late Victor Navarro del Aguila of the University of Cuzco whose instructions guided us to the site.

the site presumably remained well known to the local people, it dropped out of antiquarian tradition and an impressive number of otherwise observant travellers passed within sight of it without turning aside to follow up Cieza's indications. Among these were Gibbon (Herndon and Gibbon, 1854, pt. 2), Markham (1856), Wiener (1880), and Middendorf (1893-1895, vol. 3). Local names changed and for a long period the identification of Cieza's Vinaque was unknown. According to García Rosell, who unfortunately does not cite his source, it was in 1888 that the site now called Huari was identified with Cieza's Vinaque ruins (García Rosell, 1942, p. 91). There seems to be little reason to question this identification, although Cieza's description is a little vague as to the precise location of the ruins he visited. Except for García Rosell's date we have not been able to find any further references to Huari before 1929, but such references may well exist in local journals and newspapers not available to us.

Tello's attention seems to have been called to Huari by an illustrated article by Luís A. Gamio published in the newspaper *El Tiempo* of Lima on October 2, 1929. He reproduced Gamio's crude drawings of four Huari statues as Fig. 115 of his book *Antiguo Perú* (1929, p. 165) and makes another reference to the sculpture of Huari on p. 150 (cf. also Tello, 1930, p. 283). Apparently on the basis of the statues alone he assigned the site to the first period of his first epoch, along with the "Archaic Culture of the Callejón de Huaylas," Pucará, and the first period of Tiahuanaco, thus placing it earlier than Chavín and Paracas (p. 25).

In August, 1931, Tello paid his first visit to the site after some explorations in the neighborhood of Huancayo. He was accompanied by one of his assistants, Toribio Mejía Xesspe, and by the late Lila M. O'Neale of the University of California. Tello made a very considerable collection from Huari and nearby sites which he took to the Archaeological Museum of the University of San Marcos (Tello, 1942, p. 96). A small collection of potsherds was brought by Miss O'Neale to the Museum of Anthropology of the University of California at Berkeley and has been published in part by Kroeber (1944, p. 99 and Plate 39).

As we have already noted, Tello never published a descriptive report on his work at Huari. He did write a newspaper article about his explorations there (Tello, 1931) which the writers have not seen but which is probably the source of some statements about Huari attributed to Tello by Pío Max Medina and García Rosell (Medina, 1936-37, quoted in Navarro del Aguila, 1939, pp. 126-128; García Rosell, 1942, p. 91). Additional statements about Huari from Tello's pen can be found in his article on a stone vase from Nazca (Tello, 1940, p. 28) and in his general interpretive work presented to the 27th International Congress of Americanists, Lima, 1939 (Tello, 1942, pp. 94-98, 110, 119, 124). He made at least one later visit to Huari, in 1942, but this visit apparently produced no further publications.

From about 1936, when the journal *Huamanga* began to appear in Ayacucho, there was a growing local interest in the antiquities of Huari, and descriptions of the site in that journal by Pío Max Medina and Moisés Cavero are cited by Victor Navarro del Aguila, himself a native of Ayacucho, in his Cuzco doctoral thesis on the antiquities of the region (Navarro del Aguila, 1939, pp. 126-131). The book is embellished by a very poor woodcut showing three statues from Huari (opposite p. 128). In 1942, Navarro published a brief description of two pots in the collection of the "Asociación Cultural Unión y Progreso" of Huanta which he attributed to Huari on stylistic grounds.

The only publications on Huari in English are Kroeber's discussion of 1944, already cited, and a group of excellent photographs of the site and some of its statues recently published by Richard Schaedel (1948).

The site of Huari is located some two miles east and southeast of the town of Pacayccasa, District of Huamanguilla, Province of Huanta, Department of Ayacucho, Peru.[2] Pacayccasa is

[2] Pacayccasa is shown on the American Geographical Society's *Map of Hispanic America*, 1:1,000,000, Lima sheet, South D 18 (1938) at 13°0′ south latitude and about 74°12′ west longitude; the coloring indicates an altitude of 2500 to 3000 meters (8,202 to 9,842 ft.). The relative reliability key at the foot of the sheet indicates that this part of the map is based on a trigonometrically controlled topographic survey, but some of the cultural data are faulty, as the provincial boundaries are so drawn as to include Pacayccasa (and consequently Huari) in the Province of Huamanga rather than in Huanta. The political divisions of the department are given by Ruíz Fowler (1924, pp. 156-241), and a check in Tarazona (1946), indicates that this particular provincial boundary has not been changed since 1924.

a small village in a little green valley watered by a tributary of the Huarpa River, a right affluent of the Mantaro in whose drainage basin lie the cities of Ayacucho and Huanta. The Huarpa is probably Cieza's Vinaque River. The valley of Pacayccasa is surrounded by hills of some height which, at the time of our visit (September 18, 1946), were dry and generally bare, with patches of low scrub. The Peruvian Central Highway, an excellent improved road, passes along the slope of the hill on the west side of Pacayccasa and a rather inconspicuous track, passable by car in the dry season, connects it with the plaza of the village. The site can be reached on foot from here in less than an hour over a trail which crosses the valley and climbs the side of the hill on which the ruins are situated. An alternate route, suggested by Navarro del Aguila (1939, p. 131), leads by the Hacienda Huayllapampa, some miles nearer to Ayacucho and also to the east of the Central Highway. The hacienda is accessible by car and from there the site can be reached in not over two hours by horseback. The distance from Ayacucho to Pacayccasa is about 25 km.

The stretch of the Central Highway which passes Pacayccasa climbs from south to north to a low pass, beyond which it descends another valley to Huanta. The site of Huari is visible from the highway during almost the whole of the climb, as it crowns the top and upper facing slopes of the hill across the Pacayccasa Valley to the east. However, all that can be seen from the distance are rows of scrub marking the lines of fallen walls, so it is not surprising that travellers usually overlook it.

We actually visited only the small corner of the huge site near the so-called La Capilla sector on the north side. The site is so large that it would take months to explore in its entirety and we were only there a little over an hour. As seen from the highway across the valley, the area covered by ruins is at least two miles long from north to south and quite possibly it covers an equal distance from east to west. Moisés Cavero, in a speech published in the journal *Huamanga*, estimated that the site was "nearly equal to Ayacucho" in extent (Navarro del Aguila, 1939, p. 128). A number of haciendas, like Huayllapampa, occupy valley areas adjacent to the site, and different parts of the site itself probably have local names, so some of the places listed by Tello and others as being "close to Huari" may, in fact, be parts of the site itself.

We could not distinguish any regular plan in the site as a whole, but that may very well be because of the ruinous condition of many of the buildings and the fact that fallen stones have been moved around and piled up in order to clear patches of the site for farming. We saw jumbled masses of fieldstones plentifully sprinkled with cactus and some low brush, with here and there a section of ancient wall, well built of fieldstones laid in mud, showing through the piles of fallen stone. Of the buildings we visited, only one, the so-called Capilla, was fairly well preserved, but that was of tremendous size for fieldstone construction. Cut stone was rare in the sector we visited: we saw only a single row of cut blocks and a few isolated ones. However, Schaedel illustrates two structures of beautifully cut stone slabs which he photographed in another part of the site (Schaedel, 1948, p. 72). Rubbish is abundant among the ruins but there does not seem to be any very deep fill other than that resulting from the collapse of the walls themselves. Sherds are even more abundant on the slope of Huari hill overlooking the Pacayccasa Valley, probably because the inhabitants of the city above dumped their refuse over the edge of the plateau. The bulk of our surface collection was from the slope, but pieces from the site above were included. We saw no cuts indicating deep deposits of refuse or possible stratigraphy, but the variety of sherds in our collection and the size of the site make it very likely that such deposits exist.

The general appearance of the fieldstone buildings at Huari should be clear from the photographs in Figure 42. The construction, as already stated, is of irregular stones laid up in mud to form a very solid rubble. The surface was apparently covered originally with mud plaster, traces of which remain on a number of walls. There is less mud used between the facing stones than in the fill, although there is no sharp distinction between facing and core. Most of the stones used seem to be natural ones, gray volcanic stones 20 to 50 cm. across, but a few were probably hammer-broken. Some of the largest walls at the Capilla are two to two and a half meters thick at the base and taper symmetrically to

a thickness of 80 cm. to one meter some 7 or 8 meters above the base; this taper naturally produces battered corners. Long walls have vertical joints in them at irregular intervals as if they were built in sections. These largest walls surround enclosures of enormous size—up to 50 by 50 meters—and apparently lacked doors and niches. Indeed, we did not see a single example of a door, window, or niche in the part of Huari that we visited.[3] The only two architectural details we observed in the Huari structures were horizontal rows of projecting stones forming a sort of cornice about 4 m. up on some of the walls, and rows of small square holes in others. In some walls these rows of holes suggest beam sockets, but in others they are scattered rather irregularly over the whole wall at intervals of about a meter.

There were certain structures which suggested artificial platform mounds with adjacent enclosures, but the ones we saw were too battered to make identification certain. It was on the top of one of these possible platform structures that we found a single row of dressed stone blocks set in the ground. One of these blocks had a round hole in it around which was cut a crude curvilinear design suggesting a snake: we were not convinced that the crude snake was contemporary with the fine stone cutting. Several other blocks in this row also had round holes in them; these holes may have held vertical wooden dowels for statues, as Statue No. 9 at the Hacienda Huayllapampa has a similar hole in its base (see statue list below).

It is quite clear from Schaedel's photographs that there are at least two other types of construction at Huari besides the one we saw. He illustrates two small structures which he calls "subterranean galleries" about 3 by 4 m. in plan and 2 m. high, constructed of finely cut slabs of stone some 15-20 cm. thick and of varying sizes. They seem to form small chambers and may have served as tombs (Schaedel, 1948, p. 72). Alongside one of the slab-built buildings Schaedel's photograph shows some walls of hammer-broken stone laid in mud which look rather different from the ones we saw at La Capilla. There is more mud used in the construction, the stones are somewhat less irregular, and the faces of the walls seem to have been plastered.

Medina describes a courtyard with a well-laid pavement of cut stone at Huari (in Navarro, 1939, p. 126), and García Rosell gives some information about the water supply: "There still exist the remains of an aqueduct which supplied the town of Huari or Viñaque (sic) with water, bringing it in from the heights of Yanahuajera; the channel measures 10 km. in length and ends or begins in a reservoir" (García Rosell, 1942, p. 92). Another passage, which may refer to Schaedel's "subterranean galleries," informs us that: "In the neighborhood of Huari is found the necropolis with subterranean tombs at a depth of two meters, with plastered walls." (García Rosell, 1942, p. 92.)

Obviously, we do not have sufficient data either on Huari architecture or on the architecture of other highland areas so that we can expect to reach any useful conclusions as to the stylistic relationships of the buildings at Huari, but a few comparisons will make clear the seriousness of the problems it suggests. When we saw the ruins of the La Capilla sector we were immediately reminded of two sites at opposite ends of Peru: Viracochapampa near Huamachuco and Pikillacta near Cuzco (McCown, 1945, pp. 267-273, Fig. 13, Plates 15 and 23; Rowe, 1944, pp. 52-53, Plate 8). The resemblances are very specific but there are also some differences. The similarities are: scarcity or absence of doors, windows and true niches, producing long stretches of blind walls; great height and tapering of the walls (more pronounced at Pikillacta and Huari than at Viracochapampa); similar construction of fieldstones laid in mud; large size of the individual enclosures or "buildings"; use of "cornices" of projecting stones and rows of holes suggesting beam sockets; and absence of gables and roof-tie pegs. The chief differences are: "beam socket" holes not associated with cornices at La Capilla the way they are at the other two sites; beamholes scattered all over the walls at La Capilla; and apparently less regular ground plan and relatively more abundant rubbish at Huari. The method of constructing a long wall in vertical sections is found at Huari and Pikillacta but not at Viracochapampa.

[3] García Rosell reports that the doorways at Huari are not trapezoidal but built with vertical door jambs: i.e., they are not of Inca type (1942, p. 91).

FIG. 42. The Huari site and Huari style stone carving. *Top, left*: High enclosure wall in the Capilla sector with irregularly distributed recesses. Note man standing below the highest point of the wall. The ravine behind this wall bounds the north side of the site. *Top, right*: Detail of a wall showing traces of plaster, row of "beam sockets" and vertical division. The hole at the base of the wall is recent. *Bottom, left*: Broken wall showing typical section. *Bottom, center*: Squared block with grooves on one side, Huari. *Bottom, right*: Statue no. 10, Hacienda Huayllapampa [illegible] Statue no. 8 can be seen lying on the ground behind.

The resemblances between the three sites are sufficiently striking to suggest classing them together, but if such a classification is admissible we still have no clue as to the date of La Capilla. Such indications of date as there are at Viracochapampa and Pikillacta suggest a late date, but the entire lack of Inca stylistic influences in the buildings is difficult to reconcile with these suggestions, and no Inca pottery was found at Huari. No Inca pottery was found at Viracochapampa either, and the sherds illustrated by McCown are rather crude and fit no dated style. At Pikillacta Rowe found no sherds of any kind but was told that a few Inca sherds had been found, and noted that the ruins were directly connected with the Inca gateway of Rumicolca by walls of Pikillacta type. In short, the problem of the relationships of the Capilla sector building style at Huari must await more data for its solution.

As to the constructions illustrated by Schaedel, it is only the slab style of the "subterranean galleries" that is characteristic enough to suggest comparisons. The closest analogues to these buildings are probably the "subterranean dwellings" at Tiahuanaco excavated by Mortillet and Courty in 1903-4 (Posnansky, 1945, vol. 2, pp. 113-117, Figs. 37-41). Squared slabs are also used in constructions at Pucará (facings of the sunken courtyard at the "Temple"; cf. Kidder, 1943, frontispiece) and in the facing of the Temple at Chavín (Tello, 1943, Plate XX). No squared stone has been reported from Viracochapampa or Pikillacta.

Huari came originally to Tello's attention through its statues, of which there are now nine or ten known examples; a little search would undoubtedly produce more. They are all monumental standing or seated human figures cut out of single blocks of volcanic stone (andesite?) with a rather rough surface. It has been the fashion for many years to haul such statues down from the ruins and use them as decoration in modern buildings so it is now easier to see the sculpture by visiting the haciendas near Huari than by searching on the site itself. We did not see any statues on the part of the site we visited, although it seems likely that a row of them once occupied the line of cut stone blocks on one of the "platforms" described above.

Here are listed the known examples of Huari sculpture.

1. Standing human figure, about 1.25 m. high. Illustrated by Tello (1929, Fig. 115, upper left: front and profile views). The illustration is a line sketch reproduced from Gamio's newspaper article and is grossly inadequate. The subtitle gives the whereabouts of the statue as "Hacienda Waka Urara, Prov. Cangallo"; this is almost certainly the Hacienda Huacahura (also written Huacaura and Huancahura; in Tello's orthography it would be Waka-Ura), an estate which belonged in 1936 to Dr. Demetrio García del Barco, where Cavero states that two of the largest known Huari statues are located (Navarro, 1939, p. 129). The hacienda is in the district of Huamanguilla, Province of Huanta; the province of Cangallo lies southeast of Ayacucho many miles away and it is very doubtful if there are any Huari statues there.

2. Standing human figure about 1.25 m. high. Illustrated by Tello (1929, Fig. 115, upper right: front and profile views). This is also one of Gamio's illustrations and is listed with the same provenience as No. 1. See No. 8.

3. Standing human figure lacking the head, at least in the illustration published by Tello (1929, Fig. 115, lower left: profile and front views). Another of Gamio's drawings with the same provenience given as for No. 1.

4. Standing human figure lacking the head, at least in the illustration published by Tello (1929, Fig. 115, lower right: profile and front views). The fourth of Gamio's drawings with the same provenience given as for No. 1.

5. Body and head of a standing human figure illustrated by Schaedel (1928, p. 73, lower right). This statue is now in the porch of the house of the Cabildo at Pacayccasa, where it was placed over ten years ago by a local governor who had it removed from a corner of the facade of the village church which it had previously adorned (Cavero in Navarro, 1939, p. 129). This is one of the most interesting of the Huari statues. It is 88 cm. high, 53 cm. wide and 42 cm. thick. The face is broad and angular with a thin mouth turned down at the corners and large lenticular eyes cut into the head as if to hold inlay of another substance. From each eye a hollowed rectangle descends over the cheek to the angle of the jaw. The nose is somewhat damaged so that its original shape is uncertain. The head is crowned by a turban-like headdress which comes down almost to the eyebrow level; a flap or pendant hangs down from it on the right side of the head. The left ear is represented by a raised crescent. The head is set deeply into the shoulders without a neck, a common feature of the Huari style and most other ancient Andean ones. The body is relatively smooth without indication of clothing except a pair of horizontal ridges

which probably represent a sash. Evidently the subject wears some sort of a shirt or tunic, however, for the edge of it is visible as a chevron mark on the left arm which hangs straight down at the side. A hollow band below the chevron may have held an inlayed bracelet. The right arm is bent with the closed fist held forward, grasping a staff or club which is so battered as to be unidentifiable. The statue is broken off just below the belt but enough is left to show that the subject wore a slightly flaring skirt such as can be seen on Nos. 6, 8 and 9.

6. Standing figure, illustrated by Schaedel (1948, p. 73, lower left). He says only that it was photographed at "a Hacienda near Huari." It has a headdress of two elements, the upper one having an angular design incised across the front. The face is distinguished from that of No. 5 by having a small flat nose and a sort of snout around the mouth. It is not clear, however, whether this is just an artistic convention for a type of human mouth or whether the figure is supposed to be partly animal. The right arm is broken off. This figure is dressed in a shirt which hangs over a flaring skirt. The base is badly battered but looks roughly similar to that of Nos. 2, 3, 4 and 8.

7. Bust of a human figure, illustrated by Schaedel (1948, p. 73, upper right). It is generally similar to No. 9, having a headdress of a single element and a short cape over the shoulders, but is notable for having a hole drilled completely through the mouth. Schaedel suggests that it was used as an "oracle," but other explanations are also possible. The hole may have been provided so that the statue could "drink" chicha offerings, or so that liquid might come out of it.

8. Standing (?) figure illustrated by Schaedel (1948, p. 73, upper center). It is just possible that this is the same figure as No. 2, illustrated by Gamio and Tello, but their drawing is so poor as to make identification impossible and we think that it is more likely another similar statue. The face and dress are like those of No. 6, but this figure has a three-element headdress. The left hand evidently held a short staff or other object now broken away. The doubt about its posture indicated above results from the presence of a block of stone behind the short legs which could be interpreted as a seat. A projection of the same block appears between the figure's knees. However, the block might also have been provided merely to support the weight of the great figure without being intended as part of the composition.

9. Standing figure, illustrated by Schaedel (1948, p. 73, upper left). It is now located on the south side of the main stairway of the Hacienda Huayllapampa, where we measured and photographed it in 1946. According to Cavero (Navarro del Aguila, 1939, p. 130) Hacienda Huayllapampa was owned in 1936 by Sr. Nestor Cabrera. This statue measures 110 cm. in height and has a socket for a dowel in the base. It is the finest of the known statues in spite of its stubby legs. The features are indisputably human and the proportions are generally good. It has a low single-unit headdress. It apparently has either long hair flowing over the shoulders or a shawl hanging from the headdress. Around the neck is a short cloak like the one on No. 7 and below that a tunic falls below the knees. The tunic is fastened with a sash like the one worn by No. 5 and below it a hollow panel runs down the front of the tunic skirt, representing two pleats or perhaps a pendant end of the sash. Both arms hang straight at the sides and are represented exactly like the left sleeve of No. 5.

10. Seated figure on the north side of the main staircase of the Hacienda Huayllapampa (Fig. 42). It measures 101 cm. in height and represents a probable human figure with a low headdress sitting cross legged and somewhat crouched over. The face and knees are badly battered.

It is somewhat rash to attempt a classification of Huari sculpture on the basis of so few examples, but it seems to us that the statues that have been photographed fall into two main types which we can name tentatively from places where characteristic examples have been reported:

A. Huayllapampa type—Nos. 5, 7, 9 and 10 (?). Entirely human figures with lower headdresses and more details of clothing represented; slightly better proportions than the second type.

B. Huacahura type—Nos. 2 (?), 6 and 8. More angular figures with "muzzles," high headdresses, and a base to stand on. The clothing represented is somewhat simpler than in type A.

These two types, if they be allowed, have so much in common in general proportions, use of flaring skirt, hollow lenticular eyes and absence of incised or relief surface patterns typical of Aija, Chavín or Tiahuanaco carvings that it seems rather doubtful that the differences between them have any chronological significance. These differences may be only sex differences: the Pacayccasa type may be female and the Huacahura type male, for example; or the Huacahura type may represent supernaturals. More photographs are needed before such problems can be settled.

The Huari sculpture style is a style in its own right, perfectly distinct artistically from all other known styles of sculpture in the Andes. Its closest resemblances, and they are not very close, are with the Classic Tiahuanaco

sculpture of Bolivia. Some rather feeble similarities in the relative proportions of head, body and legs and lack of neck can be pointed out (cf. Posnansky's 1945 illustrations: the statues from Wakullani, Fig. 98; "El Fraile," Figs. 108-109; the statue at Puma Punku, Fig. 111; and the black stone statue, Fig. 134). However, the differences are very great: Tiahuanaco statues are widest at the shoulders, whereas Huari statues are at least as wide through the skirt. Eyes and ears are treated differently in Tiahuanaco sculpture, and most Tiahuanaco pieces have intricate patterns incised or cut in low relief on the clothing.

We collected 252 sherds and a few small non-pottery specimens from the surface during our visit. As there is also a somewhat larger collection of Huari sherds at the Museum of Anthropology of the University of California representing the results of Miss O'Neale's visit to the site with Tello in 1931, it will be more fruitful to discuss the pottery on the basis of the combined collections rather than presenting our data only.

The University of California has no notes on Huari to accompany Miss O'Neale's collection, but the catalog entries give some clue as to the places where her collecting was done. These entries read

A2—"Tanta Orqo, hill bordering Hac. Horcasitas." Nos. 16/4252-4292. 267 sherds, 21 other specimens.

A3—"Choqllo Orqo, hill near Hac. Huayllapampa." Nos. 16/4293-4302. 45 sherds, one other specimen.

AW1—"Rubbish heap on the way to Wari Temple." Nos. 16/4303-4322. 119 sherds.

AW2—"Temple ruins at Wari." Nos. 16/4323-4332. 45 sherds.

In each case, several sherds are included in the same museum number. One gathers that "Wari Temple" refers to the sector of Huari where her collection was made; if she and Tello went up from the Hacienda Huayllapampa instead of from Pacayccasa, it was probably a different sector from the one we visited. The numbers A2, A3 etc. are Miss O'Neale's field numbers for the various sites at which she made collections: the A, of course, is for Ayacucho and the W for Huari.

The sherds from Huari itself and from its approaches in both collections have so nearly the same paste, firing characteristics and surface treatment that it seems wise to set them up as a single classificatory unit which we will name the Huari Series. Within the group of sherds so classified, however, the considerable variations in wall thickness, color combinations and design motives would seem to suggest that our Huari Series does not represent a single style used during a single period. Some tentative subdivisions will be offered.

In addition to the Huari Series, perhaps two other small lots of sherds can be isolated; these are Huarpa Black on White and the Huamanguilla Series. Little can be done with the small residue of sherds that does not fall into any of the new groups; some are poor or worn pieces belonging to one of our defined types, others may be trade pieces or isolated examples of otherwise unknown styles. None is especially striking or similar to known styles in other parts of Peru.

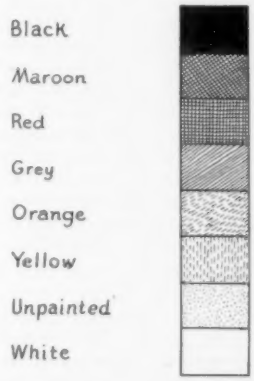

FIG. 43. Color key to accompanying text figures.

Miss O'Neale's Tanta Orco collection consists partly of Huari Series sherds and partly of a quite different style of pottery which does not occur in the collections from Huari. This we have set up as the Tanta Orco Series. One Inca sherd (Cuzco Polychrome A) was also found at Tanta Orco, although no Inca material has been found at Huari.

Huari Series. This series has a fine textured and compact paste with small amounts of fine sand and crushed quartz temper evenly distributed. Most sherds are fired evenly to a brick, orange-red, or buff color. Hardness varies considerably, but most of the pieces are extremely hard, having much the same metallic "ring" as Cuzco Series sherds. Thicknesses range from 3 mm. to 15 mm. but even the thickest pieces have the same fine paste texture as the thin ones. Within

the thickness range there seems to be some clustering at the extremes: most of the sherds in both collections are betweeen 3 and 5 mm. in thickness or about 15 mm. Intermediate pieces of all thicknesses are not uncommon, however.

The visible surfaces of all sherds of the series are smoothed and usually well polished, even the polisher marks being invisible on the best pieces. Jar interiors are scraped or brushed. About half the sherds have a red background color, usually true slip but sometimes apparently paint. Decoration is almost exclusively by painting and seven different pigments can be identified. A number of Miss O'Neale's sherds have as many as six colors, one has all seven, and sherds with three or four colors are common in both collections. Many of the pieces with three or four colors are probably parts of jars using the full color range in the total design; hence the actual combinations of color in use in the Huari style could only be determined by studying whole pieces.

There is considerable variation in the brilliance of the colors; on some pieces they are glossy and as brilliant as on the best Nazca pieces, while on others they are matte. There is also much variation in the care with which the designs are drawn, some pieces, especially the smaller and thinner ones, being very neat and precise while others are carelessly dashed off and very irregular. There are enough intermediate pieces, however, so that it does not seem advisable to set up separate types for the extremes of drawing style.

The designs are partly geometric and partly derived from life forms. Both straight and curved elements are used. Areas of color are usually outlined in black, but occasional sherds show white used for this purpose.

Deep bowls and cups are the commonest shapes among the thinner sherds. They range from 8 to 16 cm. in diameter and probably 7 to 10 cm. deep, with quite a variety of profiles. Some have round bottoms, others flat ones. At least one sherd is from a small jar with an angle in the profile of its otherwise globular body such as one finds in Coast Tiahuanaco style double spout and bridge jars from the coast. There is no evidence as to what sort of a spout this piece had, however. Larger jars with constricted necks are very common, and some must have been of tremendous size to judge by the thickness and curvature of the sherds. Vertical strap handles are fairly frequently found.

Within the Huari Series the following types can be distinguished by technique of decoration: Huari Plain (i.e., unpainted pieces the paste of which corresponds to that described for the Huari Series); Huari Red (the same paste with a red slip or ground color); Huari Orange (the same paste with an orange ground color painted on it); and Huari Polychrome. The colors used in Huari Polychrome are black, white (a chalky white, more fugitive than other colors), maroon (a purplish red, Kroeber's Red 2), red (brick red), gray (often with a bluish tinge), orange (a pale reddish shade) and yellow (a pale buff shade). Several sherds have black, white, maroon, red, and either orange or yellow, but we have seen only one sherd with all seven colors on it. Gayton and Kroeber (1927, Plate 16 B), show the same set of seven colors found in the Huari collection, and they are the commonest colors in classic Nazca as well. The polychrome type is the one that includes the greatest variation and the one that is most likely to need revision when larger collections are available for study. For the present we will be content to distinguish some apparent varieties by letters:

1. *Huari Polychrome N.* The letter N distinguishes a small group of Huari Polychrome sherds which have definite and rather striking affinities to some of the more aberrant Nazca pieces which Gayton and Kroeber included in their Nazca Y class. Rowe has examined the Nazca Y type collection at the University of California and agrees with Gayton and Kroeber (1927, p. 26) that it is "somewhat heterogeneous"; it is a catchall unit into which were gathered all the specimens from Nazca which are clearly not classic Nazca and yet do not belong to any other well-known style. The comparison we wish to make is the following: the Huari Polychrome pieces showing the greatest resemblance to any Nazca style are very close to the "Nazca Y 1-2" pieces that show the closest resemblance to classic Nazca (especially Gayton and Kroeber's Plate 16 B). Some examples of Huari Polychrome N are illustrated by Kroeber (1944, Plate 39,[4] E, F, G, M), and in our Fig. 44.

[4] The following classification of sherds from the O'Neale collection, which are illustrated by Kroeber (1944, Pl. 39), is offered by Rowe.

A. Huari Polychrome T. UCMA 16-4304.

B. Huari Polychrome T. UCMA 16-4304. The painting on this piece is unusually cursive. Note that it is poorly oriented; the top of the sherd is to the left.

C. Huari Polychrome? UCMA 16-4304.

D. Huari Polychrome T. UCMA 16-4304.

E. Huari Polychrome (N?). UCMA 16-4304. Cursive style.

F. Huari Polychrome (N?). UCMA 16-4304. Shown upside down. (See Fig. 44*a*, this paper.)

2. *Huari Polychrome T.* The letter T distinguishes a group of sherds showing clear resemblances in design to Coast Tiahuanaco of the type illustrated by Schmidt (1929, pp. 280-287) from Pachacamac, and the epigonal presumably derived from it. Some examples are illustrated by Kroeber, 1944, Plate 39, A, B, D, and in our Fig. 45, *a-c*.

Only a small minority of the Huari Polychrome sherds in our collections can be assigned to N and T varieties as the largely geometric designs of the rest contain no elements especially characteristic of Nazca or Tiahuanaco styles (cf. Kroeber, 1944, Plate 39, C, H, I, J, N, and our Fig. 45 *g-k*). We are obviously dealing with one of two possibilities: either the whole pieces from which our sherd collection was broken represented two distinct divisions, one characterized by Nazcoid elements and some others at present unassignable and the other by Tiahuanacoid elements and other unclassified ones, or the whole pieces represented a single type in which both Nazcoid and Tiahuanacoid elements might be present on the same pot. It would be difficult to decide this question on the basis of the known sherd collections alone, but there is one piece of specific evidence which makes us prefer the second alternative. In his "Peruvian Archeology in 1942" Kroeber illustrates a sketch of a design on a bowl which he studied in a private collection in Huancayo (Kroeber, 1944, Fig. 5c). The bowl is evidently of Huari Polychrome type; it is painted in six common Huari colors with the color areas outlined in black, and it shows such typical Huari design elements as the vertically stacked chevrons between vertical bands, white dots with black centers, and "leg" or other projections with curled ends. At the same time, this design seems to us to be both Nazcoid and Tiahuanacoid.[5]

3. *Huari Polychrome O.* The O variety of Huari Polychrome is so labelled from its characteristic bright-orange ground color, the same color found on sherds of Huari Orange type. It is a brighter orange than the color used in other Huari Polychrome varieties and is usually applied as a pigment of uneven thickness so that it varies from orange red to buff on the same sherd. Black, white, maroon, red, gray and flesh color can be observed on various O variety sherds in the collections studied, giving the same total of colors (seven) as for other Huari Polychrome varieties, but not the same shades. O sherds are more carelessly made and more carelessly painted than other Huari varieties and the designs are somewhat simpler. The more complex ones fall rather with Huari N than with Huari T. It is altogether possible that the O variety should be set up as a special type, but our sherd sample is too small to permit the extended comparison between O and the other Huari varieties that would permit its definition. Some examples of Huari Polychrome O are illustrated by Kroeber, 1944, plate 39, K, L, O, and in our Fig. 45, *f*.

All but one of the O variety sherds are from bowls of about the same dimensions given in general for the series. Two have small carrying lugs on the outside just below the rim, and one has a somewhat larger lug with a vertical perforation. Different bowl sherds show decoration on the outside, the inside, or both.

Huarpa Black on White. The paste is similar to that of the Huari Series but has a somewhat coarser grit temper and a less even surface treatment. The paste is medium hard, brick red in color, and evenly fired. Most of the sherds are covered inside and out with a white pigment, applied so thin in some cases that the paste color shows through giving it a pinkish tinge. Over the white, simple linear patterns are painted in black. Both colors are matte and usually show the brush-marks of their application. The designs are carelessly painted and consist of horizontal bands and straight and wavy lines; one example has

G. Huari Polychrome (N?). UCMA 16-4309. Wrongly oriented; the sherd should be horizontal.

H. Huari Polychrome? UCMA 16-4309. This is a thick piece.

I. Huari Polychrome T. UCMA 16-4309. Shown upside down.

J. Huari Polychrome T. UCMA 16-4309. Shown upside down.

K. Huari Polychrome O? UCMA 16-4309. The more I look at this one the less I think it is Huari Series. Needs a half turn, to right.

L. Huari Polychrome O. UCMA 16-4309.

M. Huari Polychrome N. UCMA 16-4309. Thick piece. Needs a quarter turn.

N. Huari Polychrome (T?). UCMA 16-4309.

O. Huari Polychrome O. UCMA 16-4306.

[5] After the completion of this paper we received No. 12 of the *Revista del Instituto y Museo Arqueológico* (Cuzco, July, 1948) and found on the ninth unnumbered plate of the "Exposición de los especímenes más importantes del Museo Arqueológico de la Universidad del Cuzco" appended to the issue a drawing ("Fig. 2416") of another whole vase which is almost certainly Huari Polychrome. It has a closed base on which a modelled serpent supports a cylindrical cup on his arched back. The cup has almost exactly the same design on it as Kroeber's Huancayo specimen and the serpent has a typically Tiahuanaco tail. No provenience is given for the Cuzco specimen.

FIG. 44. Huari Polychrome N sherds. Rim profile interiors to left. Provenience and catalogue number: *a*, from rubbish heap on way to Huari temple, UCMA 16-4304b; *b*, from temple at Huari, UCMA 16-4323a; *c*, Huari surface, Ht. 1-56; *d*, from rubbish heap on way to Huari temple, UCMA 16-4305a; *e*, exterior surface of sherd *d*; *f*, Huari surface, Ht. 1-60. All sherds about ¾ actual size. (Note: In this and accompanying figures the initials "UCMA" refer to University of California Museum of Anthropology, Berkeley. All specimens so catalogued belong to the Lila M. O'Neale collection. The abbreviation "Ht.-1" refers to Huanta 1, the site number of the Huari site. All specimens so catalogued were collected by Rowe, Collier, and Willey in 1946.)

(Note: Specimens *a* and *f* are somewhat questionable as to type identification.)

FIG. 45. Huari Polychrome T, O, and undifferentiated types. *a-e*, Polychrome T type; *f*, Polychrome O type; *g-k*, undifferentiated Huari Polychrome. Provenience and catalogue number: *a*, Huari surface, Ht.1-59; *b*, *c*, Tanta Orco, UCMA 16-4258a, b; *d*, *e*, rubbish heap on way to Huari temple, UCMA 16-4309a, b; *f*, rubbish heap on way to Huari temple, UCMA 16-4304a; *g*, *j*, rubbish heap on way to Huari temple, UCMA 16-4323b and 16-4305b; *k*, exterior surface of sherd j; *h*, *i*, Huari surface, Ht. 1-41 and 55. All sherds about ¾ actual size.

crossing lines forming small panels which are filled with one or two black blobs each. The general appearance of this type strongly suggests Chancay Black on White (Late Chancay), although in making this comparison we do not intend to imply genetic connections. Our small sherd sample suggests the presence of both constricted neck jars and large bowls. The rim sherds of both are somewhat thickened. This type is strictly tentative, having been set up on the basis of a dozen sherds in our surface collection from Huari, one from Tanta Orco, and five collected by Miss O'Neale at Conchopata near Ayacucho (UCMA 16-3246). (See Fig. 46, *i, j.*)

Huamanguilla Series. This series is suggested even more tentatively than Huarpa Black on White on the basis of seven sherds from Miss O'Neale's Huari collection which obviously do not belong to either of the groups previously described (UCMA 16-4303, 4309, 4315 and 4316). Four of these sherds are parts of simple modelled faces on the necks of large jars (Fig. 46, *c*), one is part of the body of a large hollow figurine showing a three-fingered hand in relief, and two are bowl sherds from deep bowls. The paste of this group resembles that of Huarpa Black on White although the firing is not so even: the interior surface of three of the jar necks is dark gray instead of the usual brick red and one sherd has a fire cloud. The surface is smoothed but not evenly polished and covered with a coat of dark red (not maroon) paint. Over this background some sherds have simple linear designs in black and white. On the basis of our small sample it seems likely that this series will break down into three types: Huamanguilla Red, Huamanguilla Black on Red (Fig. 46, *c*), and Huamanguilla Polychrome (i.e., black and white on red).

Tanta Orco Series. This series makes up the bulk of the large surface collection made by Miss O'Neale at the site of the same name. Artistically it is the crudest and least interesting of all the wares from the Huari area. The paste is buff to brick red in color, evenly fired, and somewhat softer than the other Huari area pastes. The grit temper is about as coarse as that of Huarpa Black on White and rather more so in some specimens. All surfaces are extremely uneven and poorly smoothed and in addition have been subjected to considerable weathering from dampness in the ground. Such decoration as there is consists of crude modelling and simple painting in black, white, yellow and red. The modelling, applied to the necks and bodies of medium sized jars, consists of eyes (lumps with two parallel grooves or a stamped circle), noses, arms in relief, simple lugs and nubs, and perhaps other motives. The most elaborate piece has a lump of clay added in which are cut crude horizontal and vertical grooves. Between the grooves are irregular rows of punctations made with a small stick or straw. Some sherds have raised bands with a series of short grooves across them and one piece has a curved raised band with a series of circular punch marks on its upper side, probably made with the end of a small cane. The painted designs are so crude as to be almost impossible to describe systematically. The ground color is either the color of the paste or a coat of red paint. Over it are drawn lines, bands and blotches of black, white, yellow and red, very carelessly applied, in a number of combinations: red and yellow on white, black and white on red, red on white and white on red. All the colors are matte. Shapes include wide and narrow necked jars of medium size with everted or thickened lips and often a pointed base, and bowls. Vertical strap handles are common and the collection includes a number of solid cylindrical legs (from tripod or tetrapod vessels) and solid projecting handles which are flattened in cross section and taper slightly. Some of them curve as well. These are the handles that Tello calls "corniform"; they also suggest phalli in shape, but none of them is furnished with specific phallic attributes. The Tanta Orco Series may be divided into a number of types: Plain, Red, at least two bichromes, and Polychrome (Fig. 46, *a, b, d, e, h*). Most of the modelled sherds are either Plain or Red.

Our collection of non-pottery objects from Huari is not extensive. We found two small bits of worked turquoise, one in the shape of a tooth; two stone flakes, one of obsidian and the other of gray-white chert; and part of a "pestle shaped" object of soft light brown pumice. The purpose of this last specimen is rather difficult to imagine as the stone of which it is made is so soft that it would have been ineffective for pounding or grinding. The preserved fragment includes part of a cylindrical head, flat and smooth on the distal end, and the broken stub of what must have been the shaft. The head measures 7 cm. in diameter and 5 cm. in length, while the shaft was 4 to 4.5 cm. in diameter. The object had been shaped by easy rubbing and grinding. Miss O'Neale collected no non-pottery objects at Huari proper but her Tanta Orco Collection includes five small chipped arrow points, two of white chert, two of white quartzite and one of pink quartzite (UCMA 16-4290), some quartzite and obsidian chips, three broken "doughnut stones," and four spindle whorls made from ground down potsherds.

Some idea of the relations between Huari and the nearby sites may be gained by noting the composition of Miss O'Neale's several collections in terms of the pottery classification we have set up. Her material from Huari itself consists mostly of Huari Series sherds but there are a few Huamanguilla Series pieces

and a small unclassifiable residue. Our collection from Huari was mostly Huari Series with a few Huarpa Black on White pieces. The Tanta Orco material belongs mostly to the Tanta Orco Series but there is a fair number of Huari Series pieces also, including two fine Huari Polychrome T sherds and several thicker Huari Polychrome pieces. At least one sherd is Huarpa Black on White and there are several unclassifiable pieces. One Inca sherd (Cuzco Polychrome A) was found at this site as already noted. The Choclio Orco collection is very small. Most of the pottery belongs to the Tanta Orco Series but there are a number of unclassifiable pieces.

We have, of course, no direct evidence by which to arrange the pottery styles from Huari and vicinity into chronological order or relate them to sequences in other parts of Peru. However, some tentative suggestions along these lines can be made by comparing the Huari styles with styles of the South Coast region and with the Cuzco sequence.

Huari Polychrome, as we have already noted, shows similarities to both Coast Tiahuanaco and Nazca. However, the resemblance to Coast Tiahuanaco is much the stronger and is to the best style of Coast Tiahuanaco, whereas the Nazca resemblance is weaker and involves only a few of Gayton and Kroeber's Nazca Y 1-2 pieces. If we may assume, as most Peruvianists since Uhle have assumed, that Coast Tiahuanaco follows Nazca on the South Coast, Huari Polychrome is most likely to be contemporary with Coast Tiahuanaco but at the same time sufficiently peripheral to the South Coast area so that attenuated Nazca influences were still being felt upon it even after the disappearance of the Nazca style at Nazca. The curious character of the Huari Series, stylistically related to two coast styles of different dates, parallels rather closely the situation of the Chanapata and Chiripa styles further east which show resemblances to both Incised (Chavín) Horizon and White on Red styles of the coast. The South Highlands was evidently an area more or less distantly in touch with the coast and receiving influences from it with some lag over a long period of time.

Rowe is of the opinion that the Huamanguilla Series may be older than the Huari Series because of certain resemblances which it shows to pottery styles studied by him in the neighborhood of Andahuaylas which have some Incised Horizon traits. The Andahuaylas collections are now being prepared for publication.

We can venture no opinion about Huarpa Black on White, but the Tanta Orco Series can be tentatively placed as later than the Huari Series. It is probably not contemporary with the Huari Series because it seems unlikely that no sherds of it would have shown up in the Huari collections if it were; they are abundant very close by at the site of Tanta Orco. Our chief reason for thinking that it is later rather than earlier than the Huari Series is that it has certain traits in common with the Early Inca Killke Series: careless execution (although Killke ware is much better made than Tanta Orco ware), use of black, white and red pigment, similar modelling of eyes on jar necks, use of the "corniform" handle, and lack of Incised Horizon traits. The presence of a Late Inca Cuzco Polychrome sherd in the surface collection of course proves nothing but it does not lessen our confidence in the later date for the Tanta Orco Series.

SUGGESTED CHRONOLOGICAL RELATIONS

South Coast	*Huari*	*Cuzco*
Late Ica		Cuzco Series
Middle Ica	Tanta Orco Series	Killke Series
Coast Tiahuanaco	Huari Series	
Nazca		
	Huamanguilla Series	Chanapata Series
Paracas Cavernas		

Having provided some concrete referents for our discussion, we can now turn to Tello's scattered statements about the sites of the Huari area and comment upon them. For some reason, Tello has very little to say about the site of Huari itself. Most of his specific statements are about the three nearby sites at which he made collections, and these are probably the same as the ones where Miss O'Neale collected. From Tello's published articles the following information about his collecting sites can be abstracted:

1. Tanta Orko is a flat-topped hill next to the Hacienda Orcacitas (other spellings of this name are common: Orcasitas [Tello]; Horcasitas [O'Neale]. Here Tello reports remains of buildings and rich refuse deposits containing worked stone and fragments of carvings, mortars, grinding slabs, club heads

FIG. 46. Tanta Orco, Huamanguilla, and Huarpa Series sherd types. *a*, *b*, *d*, *e*, *h*, Tanta Orco Polychrome (the inside of the lip of sherd *b* is decorated with vertical lines of black and yellow on red); *f*, Tanta Orco White on Red; *g*, Tanta Orco Red on White; *c*, Huamanguilla Black on Red; *i*, *j*, Huarpa Black on White (sherd *j* is painted solid black on interior). Provenience and catalogue number: *a*, Tanta Orco, UCMA 16-4257d; *b*, Chocllo Orco, UCMA 16-4293; *c*, rubbish heap on way to Huari temple, UCMA 16-4316; *d*, *e*, and *h*, Tanta Orco, UCMA 16-4257b, c, a; *f*, *g*, Tanta Orco, UCMA 16-4257g, f; *i*, *j*, Huari surface, Ht. 1-26, 27. All sherds about ¾ actual size.

and broken pottery "like the Archaic pottery of the Callejón de Huaylas" (Navarro del Aguila, 1939, pp. 127-8). In a later account of the same place he states that the Tanta Orko rubbish is buried under a thick layer of volcanic ash and contains "stone cylinders of lapis lazuli, carefully cut and polished, some so large that they seem to be columns" (Tello, 1940, p. 28). Both these last statements sound rather fantastic. In his 1942 article he says that he made excavations at Tanta Orko and found "two superimposed layers of rubbish with remains of Chanka pottery; in the lower one monochrome vases with tripod legs or corniform handles predominated, and in the upper one polychrome vases similar to the ones of this same Chanka type found on the coast." In his further remarks he suggests Chavín affinities for the material from the lower level (Tello, 1942, p. 119). This site is, of course, O'Neale's A 2.

2. Okros, the name of a gully at the head of Tarawaiko Quebrada, immediately below the ruins of Huari. Here Tello made a large collection of pottery of the type which he calls Wari or Wanka which he took to the San Marcos museum (Tello, 1942, p. 96). In another place he says that the pottery from Okros was of mixed Wari and Kollawa types (1942, p. 110). This site is probably O'Neale's AW 1.

3. Auki Willka, a hill on the summit and slopes of which remains of worked stone and rustic pottery are found. Tello says that he dug here also and found the rubbish deposits covered with volcanic ash. One gathers that the pottery here was similar to the lower level of Tanta Orko (Tello, 1942, pp. 96, 119). This site is probably O'Neale's A 3, Choclo Orco.

Tello's stylistic terms are notoriously difficult to relate to the style and period names used by other archaeologists in discussing Peruvian material, and his remarks about Huari illustrate most of the problems involved. "Chanka" for example is used by Tello to include his earlier term "pre-Nazca," which was apparently made up of materials that Gayton and Kroeber would have called Nazca B and Nazca Y together with other Nazcoid materials showing more or less Coast Tiahuanaco influence (cf. Tello, 1942, Plate 17). "Wari" or "Wanka" seems to be equivalent to Coast Tiahuanaco, at least to the smaller, finely painted pieces of this style. As type specimens for his "Wari" Tello (1942, Plate 16) illustrates four Coast Tiahuanaco pots from Cahuachi in the valley of Nazca, probably from the Pacheco site. "Kollawa" is evidently the Pacheco style: carefully executed Coast Tiahuanaco designs on enormous jars such as the ones excavated at the Pacheco site near Cahuachi, Nazca (cf. Tello, 1942, Plate 23). As both Tello and Olson collected sherds from large and small specimens at the Pacheco site and there is no artistic difference between them not attributable to the difference in size, Tello's separation of the style into small "Wanka" and large "Kollawa" pieces is nonsense.

Turning back to Tello's comments about his finds at the three sites in the Huari region we find that at Tanta Orco he describes finding a superposition with "monochrome vases with tripod legs or corniform handles" under polychrome vases like the coastal Chanka. In the light of Miss O'Neale's collection, made at the same time that Tello's was made, two interpretations of this statement are possible: (1) Tello is saying that Tanta Orco Plain type sherds predominated in the lower layer and Tanta Orco Polychrome in the upper, entirely ignoring the Huari Series material that appears at this site, or (2) he is saying that the Tanta Orco Series was characteristic of the lower layer and the Huari Series of the upper. The difficulty is that there are no sherds in the O'Neale collection from Tanta Orco which have any resemblance to Nazca Y or any other Nazcoid style, the Huari ones being of the T variety and indeed being some of the most Tiahuanacoid sherds in any of the O'Neale lots. Whatever Tello meant in this case, however, we doubt very seriously that a careful excavation at this site would show either of the possibilities that we have discussed. We can see no "Chavín" affinities in any of the Tanta Orco material, and the style of the Tanta Orco Series points very definitely to late rather than early relationships.

At Okros Tello says that he found a mixture of Wari and Kollawa styles. This statement we can interpret as meaning that he found a lot of Huari Polychrome sherds and was particularly impressed by the T variety ones. At Auki Willka he reports finding only "rustic" pottery. This description would fit either Miss O'Neale's collection from Choclo Orco or the Tanta Orco Series.

The problem of the distribution of the styles found at and near Huari will be studied by Rowe in a general report on his survey work in the Southern Highlands. On the same day that we visited Huari we made a surface collection at the site of Conchopata (Pampa del Llano) on the outskirts of Ayacucho where Tello also collected; most of the sherds belong to the Huari Series and there are a few Huarpa Black on White. Rowe has other sherds related to the Huari Series from the hill of Acuchimay at Ayacucho and from Casahuirca near Andahuaylas. Future work will probably show an even wider distribution for the style of Huari.

To summarize our discussion, we have reported three different building styles, two types of stone statuary, and four pottery series from the site of Huari and its neighborhood without being able to indicate their associations. No evidence for relative dating can be suggested from comparative studies of the architecture and sculpture, but three of the pottery series can be related stylistically to the Incised Horizon, the Tiahuanaco Horizon, and Early Inca respectively, giving a probable sequence. The most abundant pottery style at Huari itself is the Huari Series, with definite Coast Tiahuanaco connections and some resemblances to Nazca Y. It is hardly necessary to point out the importance of further work at Huari and in the region between Ayacucho and Nazca to straighten out the chronology and relationships of what was evidently one of the key areas in the development of Andean civilization.

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November, 1949

PRELIMINARY REPORT ON THE EXCAVATION OF AN ETOWAH VALLEY SITE

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THE Wilbanks site, 9CK-5, is located in the Etowah Valley, north Georgia, about fifteen miles upstream from the famous Etowah site excavated by Moorehead (1932). Excavations here have produced one structure and three superimposed refuse deposits yielding a ceramic sequence contemporaneous with middle through late Mississippi.

Robert Wauchope (1948, p. 205) tested the site for the University of Georgia some years ago with a single trench into a mound, its main feature. A brief note on the results of this excavation was published as part of a more comprehensive paper.

More thorough excavation of the site was carried on by the University of Georgia in the fall of 1948 and the spring of 1949. Work was concentrated on the mound, but a considerable amount of midden material was necessarily excavated in the process. The mound itself represented the collapsed remains of a square earth covered structure, each wall of which was composed of a single large log laid horizontally and covered with clay. This construction was reinforced externally with alternate layers of clay and silt.

Rich midden deposits were found on the floor of the structure, on the lower slopes of its outer surface, and in the surrounding area outside. These refuse accumulations were clearly separated stratigraphically into three units, which proved to be deposits of successive groups using respectively Etowah, Savannah, and Lamar ceramics. Study of a sam-

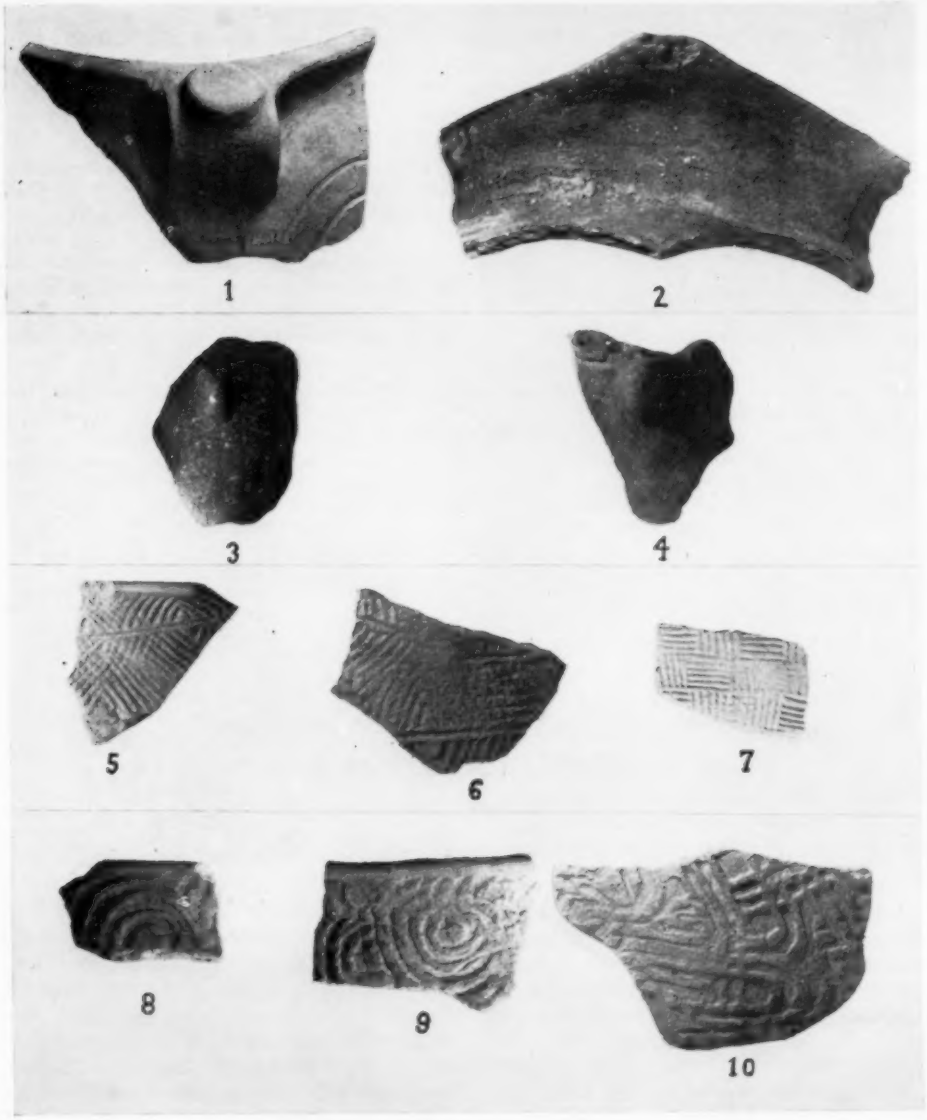

FIG. 47. Major Pottery Types at CK-5: *1*—Etowah Incised. *2*—Shell Tempered Plain Type. 3—Hiwassee Red Filmed. *4*—Unnamed Red Filmed. *5 and* 6—Etowah Complicated Stamp, concentric diamond motif. *7*—Etowah Complicated Stamp-Line Block Motif. *8 and* 9—Savannah Complicated Stamp. *10*—Savannah Complicated Stamp with unusually elaborate motif.

ple of 3,741 sherds from one trench which cut through all three stratigraphic units provides some type frequency data. The study of the full collection, some forty thousand sherds, has not as yet been completed.

The earliest midden deposit represented may be divided into two phases. The earlier of these phases, phase A, preceded the construction of the earth lodge. The later phase, phase B, was contemporaneous with this structure as demonstrated by identity of the ceramic complexes found in this midden phase and in the deposits on the floor of this structure.

Together, the two periods in this earliest midden evidently represent a considerable time span in the development of Etowah ceramics. The chief pottery type throughout is Etowah Complicated Stamp, a type which Wauchope (1948) discussed. The most important decorative motif in this type, concentric or nested diamonds, is uniformly angular in phase A and with very few exceptions has only one bar bisecting the diamonds (Fig. 47, 5 and 6). In phase B the diamonds frequently lose their sharp angles, sometimes even become circles, and the internal bars frequently run both ways, forming a cross. These latter variations are those which were included in the type Savannah Complicated Stamp by Caldwell and McCann (1941, p. 45) from the Irene site. Only two other motifs appear as part of the type Etowah Complicated Stamp at CK-5. One of these, simple blocks of parallel lines with the blocks at right angles to one another (Fig. 47, 7), is identical in execution early and late. It is insignificant, percentagewise, in both phases. The second motif, however, is the filfot cross. It appears only in phase B, with its highest frequency on the lodge floor.

Etowah Complicated Stamp, as most of the other types to be discussed, is uniformly sand tempered. However, a shell tempered plain ware and a shell tempered complicated stamp with the same motifs as Etowah Complicated Stamp, Hiwassee Complicated Stamp (Lewis and Kneberg, 1946, p. 104) are found in phase A. In this phase, the shell tempered ware constituted thirty-two per cent of the plain sherds, whereas in the later phase less than one per cent of the plain sherds and no stamped sherds were shell tempered. These plain sherds which are from jars and less frequently bowls are well smoothed inside and out. They do not seem to fit precisely any type description of which I am aware. They appear to be about as close to Dallas Plain (Lewis and Kneberg, 1946) as any other type, particularly since large rim points are present (Fig. 47, 2). In any event, they are Middle Mississippi sherds.

Other pottery types of the Etowah period are Wauchope's (1948) Etowah Plain and Etowah Incised (Fig. 47, 1), Hiwassee Red on Buff (Lewis and Kneberg, 1946) and an unnamed red filmed type (Fig. 47, 4). Fourteen of the thirty-two phase A red filmed sherds have a thin paint and shell tempering (Fig. 47, 3) thus falling in the type Hiwassee Red Filmed (Lewis and Kneberg, 1946). The remainder of the phase A sample, and all of the red filmed sherds in phase B have a thin hard red slip and sand tempering. A large proportion of the red sherds of both types bears the marks of cutting tools on their inner surfaces, indicating that excess clay was carved out. Presumably a considerable proportion of these pertains to effigy or other elaborate vessel forms.

The sand tempered plain ware of both phases adds to the jar and bowl forms of the stamped pottery some plates and probably a few bottles. It is dark in color and well smoothed inside and outside. There may be some sherds, at present included in this type, which actually should be sorted out as a polished black type. Quite a few sherds with a glossy black surface bear the same sort of tool marks on their inner surfaces as did some of the red filmed sherds. Several of these specimens are almost undoubtedly from blank faced effigy water bottles and others are from bottles.

We have very few sherds of Etowah Incised from the main deposits, and none from the completely analyzed sample. The few in the midden deposits which surround the lodge come from the upper levels, however, and there are several from the lodge floor. In a refuse pit opened in a nearby gully, sherds of this type are constantly associated with noded strap handles (Fig. 47, 1). Wauchope's

illustrations indicate that this association of strap handles and incised decoration is constant (1948, Pl. XIX, B). Handles of this type on vessels with incised decoration are commoner in Central Tennessee on shell tempered ware in a well developed, even late, Middle Mississippi Context (Webb, 1939. Pl. 64, a, 8; Pl. 92, a, center sherd in bottom row; Pl. 106, a, 7 and 10; b, 2 and 6. Myers, 1928. Fig. 165, 180, 187).

Hiwassee Red on Buff is rare as might be expected. The sherds vary from the type description in a few minor details. Temper varies from non-existent to sparse sand to sparse shell. In a few cases, black paint is added, especially in a band around the lip. Unfortunately, only two sherds were found in the stratigraphically analyzed sample. However, careful note of the occurrence of this type was made in the field and laboratory, and there is no doubt that it occurs only in the latest levels of the Etowah midden surrounding the lodge and in the deposits on the lodge floor. In both cases it is associated with the filfot cross motif on Etowah Complicated Stamp, with the curvilinear variants of the concentric diamonds, and with Etowah Incised.

After the Etowah people had moved on, another group lived on the mound formed by the collapsed earth lodge. Their midden deposit overlaps the Etowah midden on all sides of the structure. The two are, however, readily distinguishable in a profile cut. This later midden runs up on the structure walls, whereas the Etowah midden butts against it and, to some degree, runs under it. Because of this the lower portion of the structure wall provides a thick sterile parting between parts of the two deposits.

The major pottery type of this occupation is Savannah Complicated Stamp (Caldwell and McCann, 1941, pp. 44-45). The sherds differ from the original type description in the Irene Report in that the motifs now recognized as Etowah Complicated Stamp are not present, and that some sherds exhibit more complex stamps (Fig. 47, 8, 9, and *10*). The remainder of the ceramic complex in this midden deposit is not at all like that found at the Irene site, however. There is no Savannah Check Stamp,

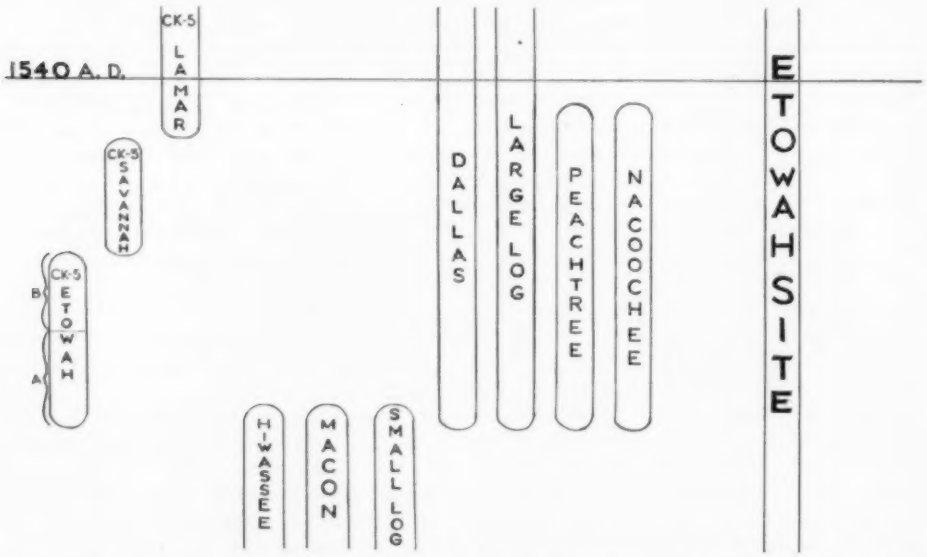

Fig. 48. Relative Chronological Chart. The bars for Peachtree, Nacoochee, and the Etowah Site have been extended more than is customary since the CK-5 ceramic sequence presented here and Wauchope's Etowah Valley sequence indicate successive occupations at these sites.

no Savannah Burnished Plain, and no Savannah Fine Cord Marked as described by Caldwell and McCann (1941). In place of these we have a new plain ware, in jar and bowl shapes, with an indifferently smoothed surface which is frequently sandy to the touch, and an orange filmed ware which is apparently confined to bowl shapes.

It now seems probable that the Savannah Complicated Stamp sherds at the Irene site were not of local manufacture, since they are in the minority at that site, were mixed with Etowah sherds, and do not fit too well, typologically, with the remainder of the complex. That we are dealing with substantially the same period of Savannah development at both sites is indicated by the Etowah Complicated Stamp sherds at Irene. All of those illustrated by Caldwell and McCann (1941, Fig. 18) are the late variants which immediately preceded the Savannah deposits at CK-5. The Irene contact with North Georgia then was at approximately this late Etowah-Savannah juncture.

Finally, there is the Lamar horizon. A third midden, containing only the types Lamar Complicated Stamp, Lamar Plain, and Lamar Bold Incised (Jennings and Fairbanks, 1939), was found in the southeast side of the mound, in some spots overlapping both the Savannah and Etowah middens. Since analysis is so far from completed, there is little that can be said at this time except that the material is of the Lamar horizon. To judge by its predominantly angular character, the Lamar Complicated Stamp is closer to that found at the Nacoochee and Etowah sites than to the sherds from the Lamar site itself.

To sum up, the shell tempered ware of phase A of the Etowah midden seems to indicate that this phase was contemporaneous with some portion of the fully developed Mississippi culture rather than with its early phases. Apparently then even the oldest phase of the Etowah culture represented at this site is later than such early Mississippi representatives in the area as Macon Plateau (Kelly, 1938) and the Hiwassee Focus (Lewis and Kneberg, 1946). The appearance of the type Hiwassee Red on Buff only in phase B which is contemporaneous with the later stages of Middle Mississippi, as indicated by the type Etowah Incised, is confusing. Apparently both phases of the Etowah midden here at CK-5 are contemporaneous with the Dallas focus as pointed out above. The red on buff ware then did not reach the Etowah Valley until long after its appearance in Tennessee.

The appearance of Savannah Complicated Stamp as the major type of a new complex was not expected. This forces us to stretch time spans somewhat, since this complex must be fitted in between the appearance of the filfot cross as a motif in Etowah Complicated Stamp, a motif otherwise confined to the Lamar horizon, and the Lamar period itself.

Savannah Complicated Stamp does give us a useful chronological link with the Georgia coast, because, as pointed out above, we are apparently dealing with the same stage of Savannah development at CK-5 and at Irene.

I had thought originally that through this tie up to the Irene site and the consequent linkage with Savannah Check Stamp, we would be able to make more far reaching comparisons. However, it is now clear that the development of the check stamp in the area from Louisiana to Georgia was continuous from the Deptford to the Lamar periods. Probably this development was concentrated somewhere near the center of this area. In any case, it is difficult, if not impossible, to tell what stage of this development is being dealt with without a large series of rim sherds.

One final point in regard to our more important evidences of relationship with Tennessee cultures. Phase B of the Etowah midden was certainly contemporaneous with the Dallas culture of Tennessee, and phase A may have been. Phase B is followed by the Savannah midden which is in turn followed by Lamar deposits. It is generally conceded that Lamar does run into the early Historic period. Here at CK-5, then, we have three cultural manifestations which must be contemporaneous with the Dallas culture, since it has been stated that the latter lasted into the eighteenth century (Lewis and Kneberg, 1946, p. 15). It would appear from this either that culture change proceeded more rapidly in the Etowah Valley than in Tennessee or that the time span for Dallas has been somewhat overextended.

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February, 1950

A PRELIMINARY SEGREGATION OF ETOWAH, SAVANNAH, AND LAMAR

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CENTERING in Georgia and extending to the adjacent portions of the states of Tennessee, Alabama, North and South Carolina are a series of archaeological complexes characterized by pottery with a complicated stamped decoration. These complexes have not yet been sufficiently defined. This paper will attempt a partial statement of the resemblances and differences between the major divisions of the group. It will not attempt to evaluate the excavations in a detailed manner. This material is what Holmes (1903, pp. 130-137) called the South Appalachian Province in which he lumped all the stamped pottery from the southeastern area. The Swift Creek Complicated Stamped material as defined in a preliminary paper by Kelly (1938, pp. 25-31, Pl. 11, a) will not be considered here. It has become evident in recent years that subdivisions of the rest of the material could be made and that they would have temporal or spatial significance. Various names have been used in the literature but the divisions have not been clear. Holmes' term of South Appalachian Province is perhaps still good for the whole area. The commonly used divisions of the later complicated stamped pottery materials are: Etowah, Savannah, and Lamar. The Etowah Complex is named for the Etowah site near Cartersville, Georgia, excavated by J. P. Rogan for the Bureau of American Ethnology (Thomas, 1887, pp. 96-107) and by Moorehead (1932). Specific names were not established for the pottery and subsequent examination has revealed a considerable mixture (Wauchope, 1948, pp. 204-206). The Savannah Complex was named at the Irene site near Savannah on the Georgia Coast by Caldwell and McCann (1941, pp. 42-48). The Lamar Complex was first named by Kelly (1938, p. 50, Pl. 12, a) from materials excavated at the Lamar site, a detached area of Ocmulgee National Monument near Macon in the central part of the state. Previously excavated sites showing Lamar materials included Nacoochee (Heye, et al, 1918) and Peachtree (Setzler and Jennings, 1941). In neither case was the complex named as such. Recent excavations by Sears (p. 137-142) in the Allatoona Basin at the Wilbanks site have further cleared up the stratigraphy suggested by Wauchope and should do much toward defining the three complexes.

THE ETOWAH COMPLEX

The Etowah site represents the largest and, in some respects, the most thoroughly reported site of the Etowah Complex, although there are at least two subdivisions present there (Thomas, 1887, Moorehead, 1932). There is also an Etowah component at the Nacoochee site (Heye, et al, 1918), but again the segregation of material was not made. Wauchope (1948, pp. 204-206) found Etowah materials at the Wilbanks, Horseshoe Bend, and Long Swamp sites. The best hypothesis is that the Etowah Complex is the one which contains the flamboyant expressions of the Southern Cult. The most distinctive traits of the complex are perhaps these full expressions of the cult with its opposed anthropomorphic eagle figures on shell gorgets, copper repoussé spotted eagle figures, flint ceremonial forms, bi-lobate arrows, copper plumes, sun disks in negative paint, etc. Platform mounds with ramps and a court arrangement are present. Burials may be either flexed or extended or stone slab boxes sporadically. The monolithic ax and copper ax blades are present. The most specific distinctions can be made on the basis of the pottery which was rather fully illustrated in the earlier reports. More recently Wauchope (1948) has established type names, which are: Etowah Stamped, Etowah Incised, and Etowah Plain (Etowah Plain is Wauchope's Etowah Plain Smoothed). There are in addition an unnamed negative painted type, an unnamed red filmed type and Hiwassee Island Red-on-Buff. Etowah Stamped is predominantly a rectilinear stamped design composed of concentric diamonds with a horizontal line or, more rarely, two lines crossing at right angles. Minority motifs are line-filled blocks and superimposed triangles, rarely and late, the filfot cross. Temper is usually grit, although shell does occur. Rims flare slightly, often with a slight thickening or lip fold, but there is never an added and pinched or punctated rim strip. Etowah Incised is decorated with a neat, broad, shallow, rounded incised line on the shoulder of jars or sometimes on rounded-shouldered cazuelas. Strap handles are fairly common sometimes with an added round button at the top. In both Etowah Incised and Etowah Plain the surface is carefully smoothed and sometimes polished. The distinctive traits of Etowah Incised are the area decorated, the shoulder of jars, and the motifs, usually arches or chevrons. This combination is quite distinctive in relation to the other incised types in Georgia. The best single criterion for the Etowah Complex is the rectilinear diamond stamp design. Secondary criteria are the simple rim treatment, typical incising, and the strap handles when associated with other features. The elements of the Southern Cult paraphernalia are valuable sorting characteristics, but are too sporadic to be dependable.

THE SAVANNAH COMPLEX

The Savannah Complex is not well known anywhere and shows considerable variation. It was first described from the excavations at Irene Mound, near Savannah (Caldwell and McCann, 1941, pp. 42-46). It appears to form a minor, and intrusive element in the Etowah River drainage of North Georgia at the Long Swamp, Horseshoe Bend, and Wilbanks sites described by Wauchope (1948). Sears in the article just preceding this one (pp. 137-142) describes a good stratigraphic series of Etowah, Savannah, and Lamar from the Wilbanks site. At Irene Mound, Savannah contained both burial and platform mounds, the latter with rectangular buildings and encircling banks. Burials were flexed, extended, cremated, or were placed in urns. Houses were rectangular, counter-sunk, or on the surface. Palisades were present. There was limited work in shell ornaments but it lacks the elaborate features of the Southern Cult. The pottery at Irene consisted of: Savannah Check Stamped, Savannah Fine Cordmarked, Savannah Burnished Plain, and Savannah Complicated Stamped. The check stamped and fine cordmarked types are probably restricted to the coastal components of the Savannah Complex. The burnished plain is found in a variety of shapes including oval bowls, carinated bowls, bottle forms and jars. There is usually no decoration except the burnishing, and lips are generally unmodified. Savannah Complicated Stamped seems to be the most consistent type in the complex. It is predominantly curvilinear in motif with bull's-eyes, concentric scrolls, loops, and figure-eights the observed elements. The stamp impressions frequently overlap to some extent but the designs are well cut and fairly well applied and usually legible. Rims are simple and flaring, in which they do not differ greatly from Etowah. The Savannah Complex as excavated by Sears at the Wilbanks site lacked the check

stamped and fine cordmarked types and contained an orange filmed type and a plain type. The Savannah Complicated Stamped remains the only generally reliable sorting characteristic, but it is felt that the material does form a complex, and that future work will establish this more clearly.

THE LAMAR COMPLEX

The Lamar Complex is the most widespread in Georgia with regional differences not yet fully determined. It has been found at Peachtree, North Carolina (Setzler and Jennings, 1941), Nacoochee (Heye, Hodge, and Pepper, 1918), Turnbull (Harris, 1940), the Lamar site (Kelly, 1938), and in collections now stored at Ocmulgee National Monument, from other sites in central Georgia. An expansion of Lamar into North Carolina is indicated by Coe (n. d.). The following trait list for Lamar has been largely derived from the excavations at the Lamar site, a detached area of Ocmulgee National Monument, Macon, Georgia (Kelly, 1938; Jennings, 1939).

SUBSISTENCE ACTIVITY

AGRICULTURAL COMPLEX

- Charred corn cobs

FOOD GATHERING COMPLEX

- Charred acorns
- Charred wild beans
- Animal and bird bones
- Fish and turtle bones
- Fresh water mussel shells, rare

ARCHITECTURAL ACTIVITY

VILLAGE LOCATION AND PLAN COMPLEX

- Village in river bottoms, usual
- Village on high terraces, rare
- Village on island or hammock in swamp
- Village palisaded
  - Vertical posts
  - Posts set in single holes
  - Overlapping entrance
- Two mounds facing across court
- Spiral ramp around circular mound
- Truncated pyramidal mounds
- Stepped ramp

HOUSE COMPLEX

- Rectangular houses
- Houses set on low earth platforms
- Post holes set singly without wall trenches
- Wattle and daub construction
- Grass thatch
- Posts in wall trench, rare

CEREMONIAL ACTIVITY

CEREMONIAL STRUCTURE COMPLEX

- Mounds as bases for public buildings
- Mounds erected by successive levels
- Mound stages capped with clay plates
- Presence of spiral ramp on small mound
- Top surfaces of mounds slope slightly toward each other
- "Ball court" between mounds
- Rectangular structure on mounds

CEREMONIAL OBJECT COMPLEX

- Incised and pierced circular shell gorgets
- Suggested trophy heads (pipes)

BURIAL COMPLEX

- Burials flexed, on side, predominately
- Burials rarely accompanied by grave goods
- Grave goods
  - Pottery vessels
  - Pipes
  - Knobbed shell pins
  - Engraved shell gorgets
  - Smoothing stones
  - Celts
- Urn burials sporadic

INDUSTRIAL AND ARTISTIC ACTIVITY

CHIPPED STONE COMPLEX

- Projectile points, medium sized, stemmed, thick, common
- Projectile points, small, triangular, thin, not common
- Triangular or ovate blades, large, not common

GROUND STONE COMPLEX

- Celts, small, flat cross-section, narrow poll, common
- Chisels, parallel sides, narrow, frequent
- Discs, bi-plane, polished, not common
- Pipes, equal arm, sporadic

ROUGH STONE COMPLEX

- Mullers, bun-shaped, or oval, common
- Mortars, shallow, medium to small, common
- Pebbles, burned, small, common
- Hammerstones, generally unpitted, common
- Smoothing stones, small, not common

BONE AND ANTLER COMPLEX

- Split bone awls, common
- Bear canines, unperforated, common
- Beaver incisors, worked, not common
- Ulna awls, common
- Antler projectile points, cut ends, common

SHELL COMPLEX

- Conch columella beads, barrel-shaped, large, not common
- Hair pins, knobbed, conch columella, not common
- Gorgets, engraved, pierced, circular, rare
- Mussel shells, unmodified, rare

WOOD COMPLEX
- Structural only

FIBER COMPLEX
- Cord, two strand, twisted, observed on pottery

METAL COMPLEX
- Unknown

POTTERY COMPLEX
- Lamar Bold Incised
- Lamar Complicated Stamped
- Lamar Plain
- Negative painted type on effigy bottles
- Circuit coiling
- Sand temper predominate
- Shell temper rare
- Smooth interiors and exteriors
- Stamping sloppy
- Incised lines, broad, shallow grooves
- Angular-shoulder cazuela bowls, round base common, flat base rarer
- Rounded or conoidal base jars, moderate shoulder, flaring rim
- Lips on jars and bowls rounded or flattened
- Strap handles on jars, rare
- Appliqúe nodes with reed punctate
- Folded rim strip immediately below rim
  - Rim strip punched, punctated, or noded
- Jars with four raised, noded rim points, rare
- Squared base jars, rare
- Animal or human effigies on rim of hemispherical bowls, rare
- Notched rim band on hemispherical bowls, rare
- Blank face effigy bottles, rare
- Straight neck bottles, rare
- Stamp designs
  - Filfot cross most common
  - Bull's-eyes
  - Concentric scrolls
  - Figure-eight
  - Loops, sporadic
- Incised designs usually geometric
  - Scroll
  - Loop
  - Table
  - Chevron
  - Guilloche
- Pipes, equal arm, flamboyant, effigy, etc., abundant
- Discs, small, cut sherd, abundant
- Stamp, paddle with incised design, present

RESIDUAL POTTERY TYPES
- Irene Diamond Check Stamped
- Unnamed cord-roughened type
- Pensacola Incised (Willey, 1949), rare

DESIGN COMPLEX
- Stamp designs
  - Filfot cross predominate
  - Scroll
  - Bull's-eye
  - Concentric loops
  - Figure-eight
- Incised designs
  - Alternate rectilinear and curvilinear motifs
  - Scroll
  - Nested tables
  - Multiple line loop
  - Chevron
  - Guilloche
- Painted designs
  - Sun symbol
- Incised shell
  - Anthropomorphic eagle beings
- Pipes
  - Human heads
  - Birds
  - Celt
  - Trophy skulls
  - Phallic

MILITARY AND HUNTING COMPLEX
- Palisades
- Defensible positions, swamp islands, etc.
- Chipped stone tools
- Ground stone tools
- Bone tools
- Animal bones, bird bones, fish bones

TRADE COMPLEX
- Gulf Coast conch shells
- Gulf Coast pottery types (Pensacola Incised)

The spiral ramp at the Lamar site appears to be unique but the court arrangement seems to be typical for most of the area, occurring at Lamar, Singer, Maxeys, Shinholsters, and perhaps at Nacoochee. Palisades are present at the Lamar and Irene Sites, the only two excavated with sufficient completeness to reveal village pattern. Many small Lamar sites do not have mounds, but all the large ones have at least one pyramidal mound. The majority of the sites seem to have an abundance of small clay pipe bowls. These are usually quite elaborate and so common as to suggest habitual, not solely ceremonial, use. Effigy pipes are present in the shape of birds, bird heads, human heads, and human skulls, and one phallic pipe. Various styles of noded bowls, boat-shaped bowls, and bowls with handles are apparently common throughout the area.

The Lamar pottery types furnish the best group of sorting criteria. The decoration of Lamar Complicated Stamped (Jennings and Fairbanks, 1939) is predominately curvilinear, shallow, and over-stamped. Motifs include the filfot cross, multiple line loop, figure-eight, and bull's-eyes. The rim is always everted and almost always has an added rim strip which may be pinched or punctated. Those punctated generally have circular "hollow reed" punctates and rarely become small rosettes with reed punctate in the center. The base may be rounded or pointed and various vessel profiles are known, all being varieties of the slightly shouldered, deep jar. Irene Filfot Stamped has the filfot cross design exclusively (Caldwell and McCann, 1941, pp. 46-49). Lamar Bold Incised is a definite style with a bold, free, and pleasing incised decoration in the form of a frieze around the shoulder of cazuela bowls. These bowls are usually of the angular shouldered variety. The lines are fairly broad grooves, neatly done on a smoothed or polished surface. The shoulders of jars are not incised. The jars and bowls very rarely have handles. In some sites shallow bowls may have a notched band just below the lip or may have erect human or bird effigies on the rim. Effigy bottles are rare but do occur in at least three sites. One of these is a black human effigy bottle from the Lamar site, the other three are negative painted animal effigy bottles from the Neisler site on the Flint River and the Bull Creek site on the Chattahoochee River. There is also an effigy bottle from the Nacoochee site (Heye, Hodge, and Pepper, 1918, Pl. 5), highly similar to the Neisler and Bull Creek specimens, which is difficult to place due to the type of excavation and reporting in which the multiple occupation was not separated. The fact that it was found in a stone box grave suggests that it may belong to the Etowah Complex.

Little is known about the shell work of Lamar except that it did exist and that fragments of shell gorgets were found at Lamar. They seem to have designs somewhat slovenly in execution and concept. Shell gorgets from Irene consist of one extremely carelessly executed Southern Cult snake design and several with geometric dot designs. Artistic effort in the Lamar Complex seems to be mainly confined to the incising of pottery and manufacture of pottery pipes. Copper work in the Southern Cult tradition is so far not known from Lamar sites.

Urns were used for burial of infants or cleaned bones of adults quite sporadically in the Lamar Complex. The usual form is a Lamar Complicated Stamped jar covered by a Lamar Bold Incised bowl. Urn burials were found at Irene Mound (Caldwell and McCann, 1941, p. 48), Ossabaw Island (Holmes, 1903, p. 136), Colonels Island (Jones, 1873, p. 455), all on the Georgia Coast, at the Shinholster's site on the Oconee River near Milledgeville, Georgia (Fairbanks, n. d. a), in the upper (Lamar) level of the Mossy Oak site on the Ocmulgee near Macon, Georgia (Fairbanks, n. d. b.), and in North Carolina (Coe, n. d.). It was not found in rather full excavations at Lamar, Peachtree, Bull Creek, or Nacoochee.

COMPARISONS

Etowah Complicated Stamped is the only one of the later complicated stamped types which is predominately rectilinear. Thus it seems to be related to Napier Complicated Stamped (Jennings and Fairbanks, 1939) and to Woodstock Rectilinear Stamped (Wauchope, 1948, Pl. 18, a), which are both earlier. The best parent would be Napier. The presence of lined blocks in Woodstock, Napier, and Etowah suggests a rather close relationship and sets them off from the curvilinear Swift Creek-Kolomoki-Savannah-Lamar series (Jennings and Fairbanks, 1939; Caldwell and McCann, 1941; Sears, n. d.). Rectilinear motifs and especially the wide use of parallel straight lines to fill areas seem much more common in northern Georgia than in either the central or coastal areas (Wauchope, 1948). The Etowah Stamped rim is much simpler than the Lamar rim but does not differ so much from the comparatively simple Savannah rims. Etowah Incised is clearly distinct from Lamar Bold Incised in area of application and motif. In Etowah the incising is almost always on the shoulders of jars; in Lamar always on the rim of cazuelas. Etowah rarely does have cazuelas with incised rims but the form is usually a rounded shoulder, whereas in Lamar the shoulder is sharply angled in the majority of cases. The Etowah designs are usually multiple line arches or chevrons, never the alternating tables and scrolls so typical of Lamar.

Savannah seems to have little or no incising. The presence of negative paint and smoothed types in Etowah and the typical noded strap handle set it off from Savannah (Wauchope, 1948, Pl. 19, b).

The Etowah Complex as a whole does not differ widely from the others discussed in this paper. The use of pyramidal mounds, courts, possible defenses in the form of ditches or palisades, burial types, stone tools, etc. are generally like the intermediate and late Mississippi levels in the Southeast. The presence of stone-box graves at Etowah (Moorehead, 1932, pp. 71-76) and Nacoochee (Heye, Hodge, and Pepper, 1918, pp. 18-26) indicates relationships with the major area of similar graves in central Tennessee (Bushnell, 1920, pp. 44-57). However, the occurrence of stone-box graves is somewhat sporadic and cannot be used as a diagnostic feature.

The presence of objects of the Southern Cult is generally restricted to the Etowah Complex in its most full-blown expression. However, the stylistic periods of the Southern Cult are not yet worked out in full detail and it is hard to distinguish the slightly modified cult material of Lamar from that of Etowah. These items probably have chronological significance within the group of three complexes and even within the Etowah Complex itself, but the situation is still far from clear. Certainly the motifs and execution of cult objects at Etowah are more vigorous than in Lamar.

The most distinctive feature of the Savannah Complex is the complicated stamped pottery. It is always curvilinear, in which it relates to Lamar and differs from Etowah. In respect to its execution it is somewhat more clearly stamped than Lamar. In addition it usually consists of bull's-eyes, concentric loops, scrolls, figure-eights, and seems to lack the filfot cross of Lamar, and thus shows fewer straight lines in the designs. It is perhaps, chiefly to be distinguished from Lamar by the absence of the folded and pinched or punctate rim. The inner surfaces tend to be matte in Savannah and smooth in Lamar. On the coast the Savannah Complex, as described by Caldwell and McCann (1941, pp. 40-46) contained the types Savannah Fine Cordmarked and Savannah Check Stamped, which do not form part of the complex in north Georgia. The Savannah Complicated Stamped figured by Caldwell and McCann (1941, Fig. 18) contained concentric diamond designs belonging to Etowah Complicated Stamped. It is evident that the Savannah Complex, as observed on the Georgia Coast, is mixed with Etowah, a cordmarked complex, and elements of the Deptford (check stamp) Complex. In north Georgia, Savannah Complicated Stamped is found with a plain ware and an orange filmed type (Sears, 1950). This indicates relationships with the later Mississippi period which cannot be specifically stated at the present time.

Lamar is typified by its careless, blurred stamping, and its pinched or punctate rim fold. The designs are generally curvilinear with the filfot cross being the most common on the coast, and in North Carolina reaching the point of being the exclusive design. Other, and usually minority, designs are bull's-eyes, concentric circles, figure-eights, and loops. The execution of the design, in general, can be distinguished from Savannah by the fact that Lamar is always carelessly or sloppily done with a great deal of overstamping of large designs. There seems to be a constant increase in size of designs from Savannah to Lamar. The folded rim strip, present almost universally in Lamar, is lacking from Savannah and serves as a good sorting characteristic for Lamar with both Savannah and Etowah. The secondary treatment of this strip by pinching or punctating or even rosetting is an additional item of separation from both Savannah and Etowah.

Lamar Bold Incised is quite distinctive in relation to Etowah Incised, both in designs and area decorated. The designs are about as carefully incised as Etowah, but are almost always composed of a band of alternate rectilinear motifs, such as nested tables, with curvilinear motifs, such as scrolls or loops. Etowah does not seem to have this regular alternation of straight and curved lines. The Etowah trait of incising the shoulders of jars with nested arches is completely unknown from Lamar. In general, Lamar incising seems to relate well to the Late Mississippi incising on the rims of cazuelas. The absence of strap handles in Lamar is notable, as they are present in a well defined form in Etowah, but not, apparently, in Savannah. The negative painted effigy jars of Lamar are rare, but seem to fit in well with the Late Mississippi negative painting tradition. At Irene the large jars have, sometimes, an incised line or series of lines

around the shoulder area. This is usually running loops of three or four lines and is on the typical Lamar deep jar and cannot be confused with the Etowah Incised arches on shallower jars.

The practice of sporadic urn burial in Lamar holds promise of yielding information on regional relationships. The use, for burial, of large jars with cazuela covers is common from central Alabama south to the Gulf Coast (Moore, 1899, Figs. 22-32; Brannon, 1938, pp. 228-235) where it belongs to the same chronological position as Lamar but to a different ceramic tradition, i.e., Fort Walton, the types being mainly Pensacola Incised or Fort Walton Incised (Willey, 1949, p. 464, Fig. 60). The Fort Walton Incised and Pensacola Incised pottery types are similar in vessel shape to Lamar Bold Incised, but the design motifs are quite different. That is, they are both facies of the widespread Late Mississippi vessel shapes and incised decoration, but differ in details. The urns and cover bowls are never stamped as is so common in Lamar, so that the trait of urn burial is evidently more widespread than the stamped tradition. In Alabama and the Florida Northwest Coast the designs very infrequently contain a combination of incised lines and small solid punctates. The motifs seem to be derived from life forms in some cases (Willey, 1949, Fig. 60, a and b), and in others seem to be either abstract or purely geometric designs. The guilloche is shared by both Lamar and Fort Walton, but this is scarcely a solid basis for postulating a close relationship. In brief, both Fort Walton and Lamar share a common Late Mississippi influence but are not directly related to each other.

CHRONOLOGICAL POSITION

The Etowah, Savannah, and Lamar Complexes overlap in time to some extent, but in general have different chronological positions. Of these Etowah is the earliest. It was found in the Alatoona Basin stratigraphically under Savannah and Lamar by Wauchope (1948) at a number of sites, e.g., Wilbanks Farm, Horseshoe Bend, and Long Branch sites. The Wilbanks Farm site was re-excavated by Sears (1950) and a good stratigraphic series of Etowah, Savannah, and Lamar, in that order, was found. Wauchope found at the Long Swamp site that Etowah was stratigraphically above Woodstock Stamped, Fabric Impressed, Check Stamped, Simple Stamped, and Napier Complicated Stamped (Wauchope, 1948, p. 205). This seems to put Etowah definitely later than the early group of stamps such as Napier, Woodstock, and Swift Creek. As it has been suggested that it is derived from Woodstock Rectilinear Stamped or Napier Complicated Stamped this would seem to check well with its stratigraphic position. The virtual absence of Etowah Complicated Stamped and the very simple expression of the Southern Cult at the Macon Plateau suggests that Etowah is slightly later than Macon Plateau. In spite of the similarity between Macon Plateau and Hiwassee Island the elaborate pottery type, Hiwassee Island Red-on-Buff, again suggests that Macon Plateau is slightly earlier than Hiwassee Island. The presence of Hiwassee Island Red-on-Buff in Etowah contexts indicates that Etowah and Hiwassee Island are contemporary. An examination of sherd collections from the Etowah and Peachtree sites at the Ceramic Repository of the University of Michigan shows a large proportion of poorly executed rectilinear designs of large size. The concentric diamonds become concentric ovals to some extent and the crossing lines become double. Wauchope (1948, p. 207) has also observed this tendency in Etowah. This large and careless stamping, and the occasional presence of filfot stamp in Etowah, may represent a late continuation of Etowah into Lamar times. Most of Hiwassee Island Complicated Stamped illustrated from the Hiwassee Island site is of this rather late variety (Lewis and Kneberg, 1946, Pl. 51, except middle sherd, right row, which is Savannah Complicated Stamped. See also Table 19), and the pottery distribution indicates that it is found in Hiwassee and Dallas Foci. All of this indicates that Etowah is roughly contemporary with Macon Plateau or, more probably, slightly later, contemporary with part of Hiwassee Island and extends into Dallas times.

The chronological position of Savannah Complicated Stamped is fairly well known, even though the complex is not yet thoroughly worked out. At Irene Mound Caldwell and McCann found Savannah Complicated Stamped, along with Savannah Fine Cordmarked and Savannah Check Stamped and Savannah Burnished Plain, associated with the first stages of the mound construction and under Irene which is Lamar (Caldwell and McCann, 1941, p. 78). In the Alatoona Basin

Wauchope described the presence of Savannah between Etowah and Lamar (Wauchope, 1948, pp. 204-206), an observation repeated by Sears at the Wilbanks Farm site (Sears, 1950). This would seem to fix securely the date of Savannah. In addition, there is some evidence, already referred to, that Savannah evolves into Lamar, and that it does not evolve out of Etowah but out of Swift Creek. At Cowarts Landing site Willey (1939, pp. 140-147) found Lamar above Swift Creek, but there is reason to believe a considerable amount of time elapsed between Swift Creek and Savannah. The presence of check stamp and cordmarked types with Savannah at Irene suggests that it derived much of its content, on the Georgia Coast, from the preceding Wilmington period. However, Savannah does not seem to be simply a transitional phase between Swift Creek and Lamar; the possession of burnished surfaces, cazuela bowls, and orange painting indicates the intrusion of Mississippian elements into Georgia.

The Lamar Complex represents a widespread cultural style lying above Etowah and Savannah and below Ocmulgee Fields. At Macon the Lamar site presents a fair stratigraphy with Lamar superior to Macon Plateau (Jennings, 1939, pp. 51-53). At Irene Lamar was above Savannah within a very short sequence (Caldwell and McCann, 1941, p. 78). At the Wilbanks Farm site near Cartersville both Wauchope (1948) and Sears (1950) found Lamar at the top of the sequence. The stylistic similarity between Lamar Bold Incised and Ocmulgee Fields Incised clearly indicates a development from Lamar to Ocmulgee Fields, which, of course, means that it will be difficult in some cases to place some material wholly within either complex. In general, it is considered Lamar if the large jars or cazuela bowls have the body stamped. If the body of the bowl is brushed, stippled, or plain it is considered Ocmulgee Fields. There are also other pottery traits that serve to distinguish the two complexes. In central Georgia Lamar Complicated Stamped has not been found with historic materials. At the Tarver site just north of Macon some historic material is present along with some complicated stamped sherds but there is also Ocmulgee Fields pottery present, and the Lamar has a late appearance. In north Georgia surface surveys of such sites as the Turnbull Mound, believed to be the historic Cherokee town of Tugalo (Harris, 1940), show Lamar Complicated Stamped and Lamar Bold Incised to be associated with various eighteenth century trade materials. There seems to be good reason to believe that the Cherokee, in part at least, had a material culture of the Lamar type (Setzler and Jennings, 1941, pp. 50-57). The central Georgia Lamar material must be ascribed to the Creek group, probably to the Hitchiti towns of the early part of the seventeenth century and extending back an unknown time (Swanton, 1918, has an analysis of Creek distributions and sites). Thus we are faced with the proposition that one fairly coherent body of archaeological material must be ascribed to two differing cultural groups with languages belonging to different stocks. That language does not correlate with other elements of culture is not surprising in itself. What is surprising is that both Cherokee and Creek should have a material culture so similar. Two features stand out at the present time which may serve as diagnostic features separating the Cherokee from the Creek Lamar materials. The presence of check stamp of small grid in the Peachtree site (collections at the Ceramic Repository, University of Michigan) seems to be fairly consistent and may be repeated in other northern sites. It has been noted in a series of surface collections. This check stamp is hard to separate into its various components but future work with excavated material may yield the answer. There is also a definite lagging of the complicated stamp in Cherokee sites and the whole Cherokee area. Thus at Macon, in central Georgia, complicated stamping has given way to brushing and stippling by 1690, while it continued in the north well into the late eighteenth century. Lewis and Kneberg (1946, p. 98, Pl. 55) describe material from the Cherokee occupation of Fort Loudoun in 1760 and figure Lamar Complicated Stamp, Overhill Check Stamped and something that seems to be the late "Lamar-like" variety of Etowah referred to above. This same tendency for complicated stamping to hold on at the peripheries of the Georgia area has been observed on the Atlantic Coast. Caldwell (n. d.) excavated early eighteenth century material from the

vicinity of Fort King George, near Darien on the central Georgia Coast, which shows a modified Lamar which is still stamped, still curvilinear in part, and still has the Lamar pinched rim. The vessel shape is an aberrant conical bowl. Sherds from the fort moat, observed at Castillo de San Marcos National Monument, St. Augustine, Florida, and believed to belong to the historic Timucua, show a modified variety of Lamar. This material has interesting Lamar resemblances in some of its stamped designs and in the pinched rims of Lamar type. The St. Augustine period is dated by Smith (1948, pp. 314-318) as from 1565-1750 and the Leon-Jefferson period from 1650-1725. Thus the Lamar Complex is seen to date from the end of Savannah times in central Georgia until about 1670, while in north and southeast Georgia it probably extends until the latter part of the eighteenth century. In the latter period it becomes mixed with more Mississippi traits, such as incising in greater abundance, and also with a late variety of check stamp. This mixture with residual types may shed light on the nearly pan-southeastern spread of Lamar pottery. This was evidently a period of widespread leveling processes among the various cultural elements that had developed in the southeast or diffused into it. This cultural blending was evidently not extended to linguistic and political spheres as the Creek and Cherokee retained their distinctive languages and political organizations.

SUMMARY

1. Three archaeological complexes exist in the late prehistoric level of Georgia and the surrounding area: Etowah, Savannah, and Lamar. They are characterized by complicated stamped pottery, flat-topped pyramidal mounds, and a variety of other late cultural elements.

2. Etowah is the earliest and is characterized by a rectilinear stamp, an incising on collars of jars, and elements of the Southern Cult.

3. Savannah is characterized by curvilinear stamped pottery, orange filmed pottery, and, sporadically, cordmarked and check stamped pottery.

4. Lamar is the latest and is characterized by a predominantly curvilinear stamped pottery (often the filfot cross motif is exclusive), a bold incising on the rims of cazuelas and a somewhat exhausted Southern Cult.

5. Lamar can be ascribed to both the Cherokee and Creek, in northern and central Georgia respectively.

6. This period is one in which there occurred a widespread diffusion of Mississippian elements into the southeast and all three complexes partook of it in varying degrees. These Mississippi elements were first blended with the native complicated stamping tradition and then replaced the earlier elements almost completely. This replacement proceeded more slowly in the peripheries of the area than in the center.

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Museum Branch
National Park Service
Washington, D. C.
May, 1950

CULTURE CHRONOLOGY IN TEXAS*

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THIS BRIEF statement is presented as a summary of the archaeological sequences as they have been postulated to date in the Texas area. It is a compilation of the results of investigations by several dozen archaeologists who have worked in the area during the past quarter century or more. Necessarily it is brief and only a bare minimum of description of each cultural group has been included. Also, the sequential alignments are for the most part tentative. Only in rare instances has extensive field work established definitely the positions suggested. The McKern system of culture designation has been used to indicate groups and subdivisions of groups throughout, although the term aspect tends to have more of a temporal than spatial implication.

Texas may be divided archaeologically into five generalized regions based on both cultural

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and physiographic factors (Fig. 49). (1) The Trans-Pecos region lies west of the Pecos River. (2) The Panhandle-Plains region lies north of the Clear Fork of the Brazos River and west of Fort Worth. (3) The Central region occupying the central portion of the state is bounded by the other four regions. (4) The Coastal region is a rather narrow belt along the gulf coast. (5) The Northeastern region lies east of the Trinity River (except within the coastal belt). Some cultural overlapping occurs between these areas, but for the most part they remain fairly distinct through the entire time span of known human occupation.

Four broad, chronological horizons may be distinguished over the whole area: (1) The early lithic, hunting horizon, comparable in time to Folsom, Clovis, and Scottsbluff cultures; (2) The Balcones Phase, or early food gathering horizon, comparable to the southeastern archaic horizon and the southwestern desert cultures; (3) The agricultural horizon; (4) The Historic period after the first appreciable impact of European culture.

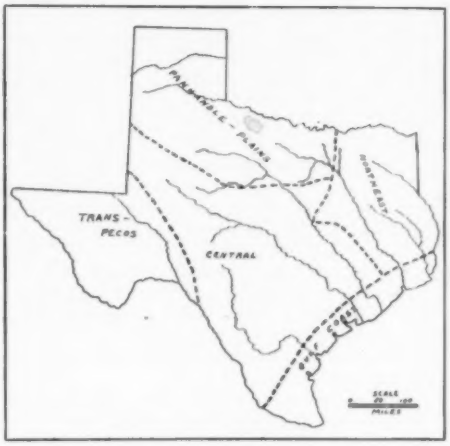

FIG. 49. Outline map of Texas showing principal rivers and regional divisions.

TRANS-PECOS REGION [1]

The early lithic, hunting horizon has not been identified in any sites of this region.

The Balcones Phase is represented by the Big Bend Aspect, covering the period from circa 3000 B.C. to 1200 A.D. It is identified in a large number of rock shelters and open campsites, occupied by nomadic food-gathering groups depending secondarily upon hunting and fishing. They are known largely from the rock shelters containing pictographs, bedrock mortars, assemblages of coiled basketry, twilled matting, fibre sandals, woven nets, fur cloth, painted pebbles, atlatls and darts, and flexed inhumation. They had no pottery, permanent houses, polished stone tools, bow and arrow, nor agriculture. Five foci of the aspect have been differentiated on the basis of broadly similar, but nevertheless distinct, cultural complexes. The Maravillas Focus represents the earliest known culture of the region, dating circa 3000 B.C. to 300 A.D. Developing out of this focus the Santiago Focus appeared circa 100 A.D. and continued in existence until circa 700 A.D. The Pecos River Focus, also developing out of the earlier Maravillas Focus circa 300 or 400 A.D., dominated the area for several centuries and survived until circa 1000 A.D. Two new groups came into the area about 900 A.D. One, the Chisos Focus, dominated the latter part of the period and survived into the following period, disappearing about 1400 A.D. In this group may lie the ancestry of many of the nomadic groups that occupied the region in early historic times. The Livermore Focus entered the area about the same time and probably represents an ancestral root of the later foci of the Bravo Valley Aspect, losing its identity about 1200 A.D. These latter two foci differed, in their later stages, from the earlier foci in that they used some trade pottery from southern New Mexico and practiced some primitive agriculture.

The agricultural horizon begins in this region about 1200 A.D. and is known as the Bravo Valley Aspect. In this period small pueblo type villages with pit-houses developed, agriculture was practiced, rock shelters were virtually abandoned, the bow and arrow gradually replaced the atlatl and dart, pottery was made abundantly and work in stone, bone and shell was elaborated. Within this aspect several foci have been identified. The La Junta Focus came into existence circa 1200 A.D., lasting some 200 years. Following this the Concepcion Focus dominated the area

[1] Kelley, Campbell, & Lehmer, 1940 and Sayles, 1935.

from circa 1400 A.D. until 1700 A.D. At this time there were several nomadic tribes ranging through the area. These tribes were encountered by the early Spanish explorers after 1535 and lasted in the region as late as 1870.

On the purely historic horizon, the Conchos Focus lasted from circa 1700 A.D. to shortly after 1800 A.D., and represents the period of Spanish acculturation of the Indian villages. The Alamito Focus represents Mexican occupation developing out of a thoroughly acculturated Conchos Focus between 1800 and the present time. The Presidio Focus has been used to designate the modern Anglo-American culture of the area from circa 1850 A.D. to the present time.

PANHANDLE-PLAINS REGION[2]

The early lithic, hunting horizon is well represented in this area by such sites as Plainview (Sellards, et al., 1947), the Lipscomb bison quarry, and sites in Roberts County. The sites of Folsom, and Clovis, New Mexico are nearby.

The Balcones Phase is represented in the southern part of the area by many individual sites that generally fit into the description of the phase in other areas of Texas. However, no foci or aspects have been defined.

The agricultural horizon appears here circa 1300 A.D., in the Panhandle Aspect. Only one focus of this aspect has been defined. The Antelope Creek Focus occupied the area from circa 1300-1450 A.D. This was an agricultural group, living in permanent villages composed of 6-80 single and multiple room, masonry houses. They made cord-marked pottery, used the bow and arrow and many tools and implements of bone and stone. Many trade items from the Puebloan Southwest are seen in sites of this focus. The Henrietta Focus, not associated with the Panhandle Aspect, occupied the eastern area of the region between the Red River and the Clear Fork of the Brazos River from circa 1450 to 1650 A.D. This was an agricultural and hunting group, with permanent villages. They made shell-tempered pottery, used the bow and arrow and made, extensively, tools and implements of stone, bone, shell and antler.

Shortly prior to historic times some of the Apache tribes roamed over the region, and by 1700 A.D. the Comanche tribe began driving the Apache southward. Some of the Wichita tribes moved south of the Red River shortly after 1750 A.D., and remained there in such historic sites as Spanish Fort until 1870 A.D.

CENTRAL REGION[3]

The early lithic, hunting horizon is well represented in this area by such sites as the McLean site, where Clovis type artifacts were found in association with extinct fauna; the Montell Shelter and Sabinal Cave where Folsom type artifacts were found associated with remains of extinct fauna (Sellards, 1947). Other sites have been noted.

The Balcones Phase is represented by a single aspect covering the period from circa 3000 B.C. to 1400 A.D. The Edwards Plateau Aspect is identified in a large number of open campsites, burned rock middens and some rock shelters, occupied by nomadic food gathering groups depending secondarily on hunting and fishing. They are known largely from the midden deposits scattered along the stream banks, containing distinctive assemblages of lithic material. Large dart points, blades, hand axes, heavy scrapers and stone awls are the principal artifacts. As in the Big Bend Aspect, no pottery, agriculture, permanent houses, bows and arrows, or polished stone tools are identified with this aspect. Three foci have been differentiated. The Clear Fork Focus and the Round Rock Focus appear to be contemporaneous (Campbell, 1948) in the region from circa 3000 B.C. through the entire aspect and probably survived into the following period disappearing about 1500 A.D. The Uvalde Focus (Kelley, 1947a) appeared in the region circa 1200 A.D. and survived to circa 1400 A.D.

The agricultural horizon does not appear in this region until about a century prior to the historic period, and is even then only semi-agricultural. It is represented by the Central Texas Aspect. This aspect is differentiated more on the basis of use of the bow and arrow, pottery, and semi-permanent villages than on the small amount of agriculture practiced. Three foci have been differentiated.

[2] Krieger, 1946 and Sayles, 1935.

[3] Kelley, 1947 and Sayles, 1935.

The Nueces Focus came into existence circa 1450 A.D. and lasted some two centuries. The Austin Focus dominated the region during the same period and probably became the semi-sedentary Tonkawa tribes of historic times, the last remnants of which did not leave the area until 1870 A.D. The Toyah Focus occupied the area sporadically from circa 1400-1700 A.D. This group was known historically as the Jumano and probably belongs more to the Trans-Pecos region than to the Central region. They are known to be migratory traders ranging annually from the vicinity of Presidio, Texas, through southeastern New Mexico, across central Texas and even to the Hasinai villages of east Texas.

During historic times a number of tribes are known to have ranged over the region, principally the Coahuiltecan and Apache tribes, as well as the previously mentioned Tonkawa tribe. There were also several small sedentary groups living mostly east of the Brazos River at this time. About 1700 A.D. the Comanche tribe came down from the plains to the north and gradually pushed most of the other nomadic tribes southward and even into Old Mexico, thus dominating the area west of the Brazos River until 1870 A.D., when virtually all Indians were driven from Texas by the American settlers.

GULF COASTAL REGION[4]

The early lithic, hunting horizon is represented in this region by the association of Folsom and Clovis types of artifacts with extinct fauna in the Berclair Terrace in Bee and Goliad Counties (Sellards, 1947).

The Balcones Phase is represented by shell heaps, and open campsites along the coast, representing nomadic groups without agriculture or permanent villages. They made no pottery, used the atlatl and dart, made the majority of their tools and implements of shell and lived largely by food gathering (principally shellfish), and supplemented their economy by fishing and hunting. No aspects have been fully defined in this region but several foci have been established. The early part of the horizon, prior to circa 700 A.D., is little known and it may only be said that sites exist which probably represent that period. The earliest defined group is the Aransas Focus existing along the central section of the coast from circa 800-1500 A.D. In the southern section of the region the Brownsville Focus occupied the Rio Grande delta from circa 1300-1700 A.D.

The agricultural horizon is virtually nonexistent along the Gulf Coast of Texas. When the first Europeans came to that area in 1533 the Karankawa tribes dominated the Central section. The archaeological components of the historic Karankawa are known as the Rockport Focus and probably came into existence circa 1500 A.D., surviving until after 1800 A.D. In the southern section (and further inland into the Central region) the Coahuiltecan tribes existed somewhat prior to 1500 A.D. surviving until after 1800 A.D. In the eastern section of the region the Bidai, Atakapa, and Akokisa tribes are known historically (Swanton, 1946) from circa 1700 to 1800 A.D., and represent migrants from the southeastern United States.

THE NORTHEASTERN REGION[5]

Both physiographically and culturally this region is distinct from the rest of the state and is a part of the southeastern United States. The early lithic, hunting horizon has not been identified here.

The Balcones Phase is represented in the area by many individual sites that generally fit within the description of the phase in other areas of Texas. However, no delineation between them has been made nor have any foci or aspects been established.

The agricultural horizon began here very early, and continued on through historic times. Two aspects of this horizon have been defined. The Gibson Aspect with its agricultural economy, permanent villages, religious emphasis (in flat-top, temple mounds and associated cultural assemblages), extensive manufacture of pottery, and use of the atlatl and dart along with the bow and arrow, is the earliest and may date from circa 500 A.D. to 1400 A.D. Five foci have been identified. The Alto Focus (Newell & Krieger, 1949) is the earliest and dominated the region through most of the

[4] Campbell, 1947 and Sayles, 1935.

[5] Krieger, 1946; Newell & Krieger, 1949; Swanton, 1946 and Sayles, 1935.

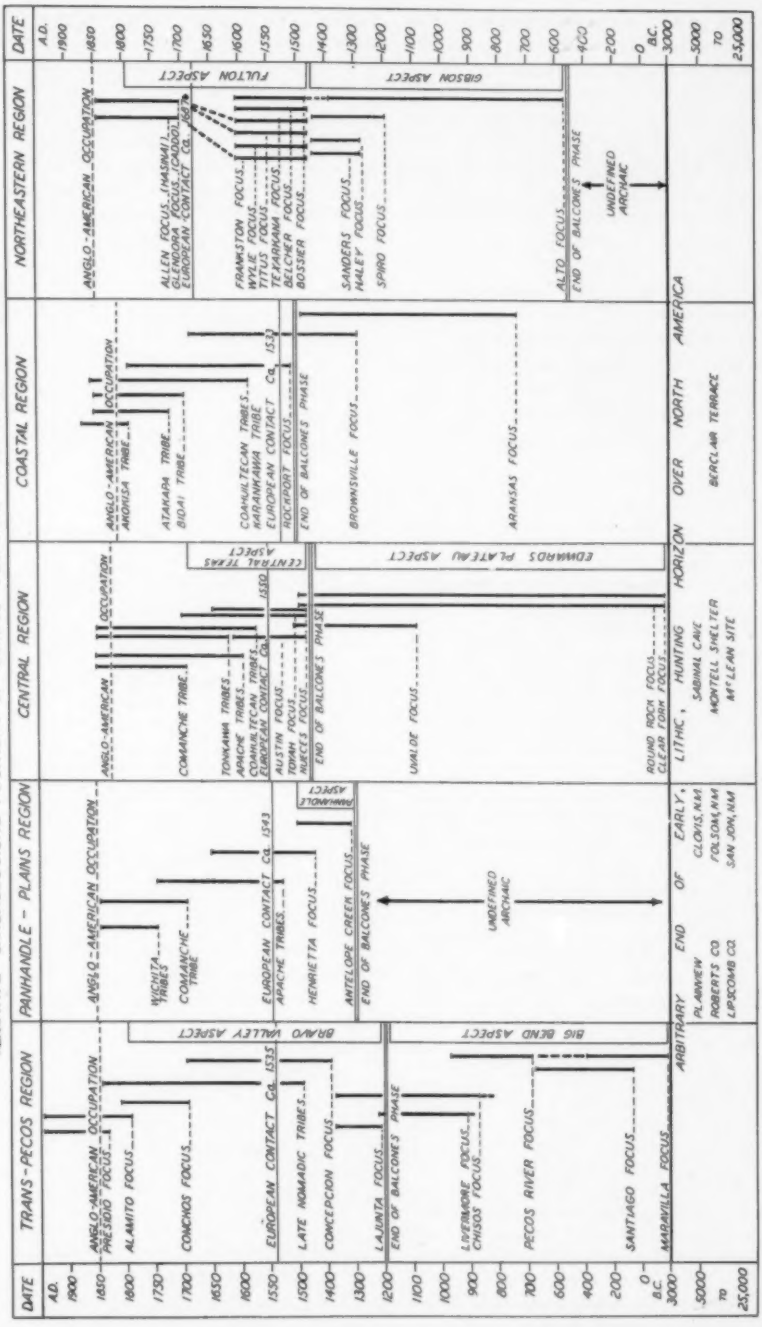
TENTATIVE CHRONOLOGICAL POSITIONS OF VARIOUS CULTURAL SUBDIVISIONS IN TEXAS
DATE
TRANS-PECOS REGION
PANHANDLE - PLAINS REGION
CENTRAL REGION
COASTAL REGION
NORTHEASTERN REGION
DATE
A.D.
1900
1850
1800
1750
1700
1650
1600
1550
1500
1450
1400
1350
1300
1250
1200
1100
1000
900
800
700
600
400
200
0
B.C.
3000
5000
TO
25,000
ANGLO-AMERICAN OCCUPATION
PRESIDIO FOCUS
ALAMITO FOCUS
CONCHOS FOCUS
EUROPEAN CONTACT Co. 1535
LATE NOMADIC TRIBES
CONCEPCION FOCUS
LAJUNITA FOCUS
END OF BALCONES PHASE
LIVERMORE FOCUS
CHISOS FOCUS
PECOS RIVER FOCUS
SANTIAGO FOCUS
MARAVILLA FOCUS
BRAZO VALLEY ASPECT
BIG BEND ASPECT
ANGLO-AMERICAN OCCUPATION
WICHITA TRIBES
COMANCHE TRIBE
EUROPEAN CONTACT Co. 1543
APACHE TRIBES
HENRIETTA FOCUS
ANTELOPE CREEK FOCUS
END OF BALCONES PHASE
UNDEFINED ARCHAIC
PAMAHACHE ASPECT
ARBITRARY
PLAINVIEW
ROBERTS CO
LIPSCOMB CO
END OF EARLY, OF
CLOVIS, NM
FOLSOM, NM
SAN JON, NM
ANGLO-AMERICAN OCCUPATION
COMANCHE TRIBE
TONKAWA TRIBES
APACHE TRIBES
COAHUILTECAN TRIBES
EUROPEAN CONTACT Co. 1580
AUSTIN FOCUS
TOYAH FOCUS
NUECES FOCUS
END OF BALCONES PHASE
ROUND ROCK FOCUS
CLEAR FORK FOCUS
CENTRAL TEXAS ASPECT
EDWARDS PLATEAU ASPECT
LITHIC, HUNTING
HORIZON
SABINAL CAVE
MONTELL SHELTER
McFLEAN SITE
ANGLO-AMERICAN OCCUPATION
ANGLO-AMERICAN OCCUPATION
ARONISA TRIBE
ATAKAPA TRIBE
BIDAI TRIBE
COAHUILTECAN TRIBES
KARANKAWA TRIBE
EUROPEAN CONTACT Co. 1532
ROCKPORT FOCUS
END OF BALCONES PHASE
BROWNSVILLE FOCUS
ARANSAS FOCUS
OVER NORTH AMERICA
BERCLAIR TERRACE
ANGLO-AMERICAN OCCUPATION
ALLEN FOCUS - (NASINAI)
GLENDORA FOCUS - (CADDO)
EUROPEAN CONTACT Co. 1542
FULTON ASPECT
FRANKSTON FOCUS
WYLIE FOCUS
TITUS FOCUS
TEXARKANA FOCUS
BELCHER FOCUS
BOSSIER FOCUS
GIBSON ASPECT
SANDERS FOCUS
HALEY FOCUS
SPIRO FOCUS
ALTO FOCUS
END OF BALCONES PHASE
UNDEFINED ARCHAIC

FIG. 50

time span. It has been postulated that this focus may have had some impetus from the Formative period of Middle America. Somewhat before 1200 A.D. the Spiro Focus and the Haley Focus made their appearance in the region surviving to Fulton Aspect times. The Sanders Focus was relatively short lived and more restricted in area, and dates circa 1300-1400 A.D. The Gahagan Focus of northwestern Louisiana is perhaps comparable in time to the Alto Focus and belongs to this aspect but has not been found in Texas. The Fulton Aspect, differentiated on the basis of distinctive pottery types, lack of temple mounds and the associated religious emphasis, and use of the bow and arrow rather than the atlatl, has been dated circa 1400-1850 A.D. Six foci have been differentiated in various parts of the region. The Bossier Focus (Webb, 1948) developing out of the earlier Alto Focus is roughly contemporaneous in its later stages with the Belcher Focus, Texarkana Focus, Titus Focus, Frankston Focus and the incompletely defined Wylie Focus (Stephenson, 1949). These foci may be dated from circa 1400-1650 A.D., at which time appreciable European contact was established in the region (Swanton, 1942).

In historic times it may be said that the Fulton Aspect remained dominant and two new foci of that aspect developed. The Allen Focus developing with only slight change out of the Frankston Focus was known historically as the Hasinai tribes. The Glendora Focus developing out of the Belcher and Titus Foci was known historically as the Caddo tribes. Both foci date from circa 1700-1850 A.D.

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This brief synopsis of the chronological positions of the cultural units of Texas, that have to date been established with various degrees of certainty, is based primarily on the following published researches. Although many more publications are considered excellent and have, in fact, been used for the compilation of this summary, the ones here listed are considered to be most definitive and each carries with it extended bibliographies relating to the region it discusses.

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FACTS AND COMMENTS

AN IMPLEMENT OF ELEPHANT BONE FROM MANITOBA

On the 11th of September, 1948, a farmer was ploughing on his farm near Lac du Bonnet, roughly fifty miles northeast of Winnipeg, Manitoba. His ploughshare turned up a stone hammer and at the same time laid bare an object which, at first, he took for a piece of wood or a potato, because of its size, shape, and colour. A moment later he realized that no potato could be there, and, investigating further, discovered that the object was the end of a large bone which had been artificially shaped.

Being a man of unusual intelligence, he marked the spot where the find had been made, and covered it with a steel plate. Later he took the two specimens to L. T. S. Norris-Elye, M.A., the Director of the Manitoba Museum, in Winnipeg. Realizing the potential importance of the find, Mr. Norris-Elye sent the bone implement and an account of its discovery to me at the National Museum of Canada in Ottawa.

The bone was quite clearly too large to belong to any of the present animals of Manitoba, even the moose. In its present form the specimen is seventeen inches long, three inches wide at the broad end, and an inch and a half thick, about as long as a man's hand and forearm. It may have been a trifle longer originally, for the farmer who found it is under the impression that he missed a small tip. He was not able to find it when he searched later.

Consultation with C. M. Sternberg, vertebrate palaeontologist of the Geological Survey of Canada, led to the conclusion that the bone was the fibula of a mammoth or of a mastodon. This opinion was confirmed by Dr. C. L. Gazin, Curator of the Division of Vertebrate Palaeontology at the United States National Museum, who examined a cast of the original specimen which I sent to Dr. Frank H. H. Roberts, Associate Director of the Smithsonian Institution.

The distal articular end is complete, but the proximal end has been chopped away, apparently with an adze, to taper the bone to a point. The marks of the tool used in this operation are clearly visible, beneath a continuous coating of glossy patina.

Remains of both the mammoth and the mastodon have been found in the vicinity of Winnipeg on several occasions (Leith, 1949). Molar teeth make the identification of the two distinct genera simple and certain, so the attribution of this particular bone to either one does no violence to the known possibilities.

The spot at which the find was made once lay at the bottom of glacial Lake Agassiz (Johnston, 1934). It is in a large level field. The site is 800 feet above sea level, and the land surface dips slowly to the west, falling 25 feet in the first mile and a half, and 25 feet more in the next eight or nine miles. About five miles to the north-east the land rises abruptly two hundred feet where sand and gravels mark the site of an island in old Lake Agassiz. To the east are the ill-defined remnants of the Gimli beach, one of the lowest and latest of the fifty-odd Lake Agassiz beaches; this beach was formed during a period of stability.

A soil map of the area corroborates the statement that the site is in the old lake bed, the accompanying legend reading: "Lake-bed and flood-plain deposits; clayey. Soil: black clay; sub-soil, clay; surface nearly level or gently sloping."

When I visited the site in May, 1949, I found a dark clay-like soil and collected two samples of it, one from

FIG. 51, *a*. Implement made from prehistoric elephant fibula.

FIG. 51, *b*. Portion of bone implement showing tool marks.

the level in which the bone implement was found and another from immediately below it. The upper had a pH of 6.2; the lower, 7.0.

Lying immediately above the bone implement, and in actual contact with it, was a grooved stone hammer or maul of a type common on the prairies. It measures 7¼ by 3¾ by 2¼ ins. and weighs about 3¾ pounds. It is of a fine-grained gneissic granite according to Dr. H. M. A. Rice of the Geological Survey of Canada. It is a good deal less carefully made than are most artifacts of this type and the encircling groove is shallow, varying from 1/16 to 1/8 of an inch. The surface colour and weathering in the groove are the same as that of the untouched surface. Both ends show an abraded area, one of them perhaps three times as large as the other.

There have been several reports of finds of archaeological material on the old beach terraces of glacial Lake Agassiz. One of the earliest was by Warren Upham in 1888 who was informed by J. B. Tyrell that "sharp-edged fragments of quartzite, chipped by human workmanship" were found in north-western Manitoba at an elevation of 1,135 feet (Upham, 1888). This would place them on the Campbell beach which is dated at thirteen to sixteen thousand years ago. W. A. Johnston was unable to verify this occurrence in 1933 (Johnston, 1934), but the definite figures for the elevation and the positive identification of the material as quartzite would suggest that the original find was authentic.

Another early find was reported at Little Falls, Minnesota, by Miss F. E. Babbitt, who discovered a stratum in the gravels containing many artificially chipped fragments of quartz (Babbitt, 1884). This site was investigated by W. H. Holmes who could not accept the artifacts as contemporary with the gravels in which they were found (Holmes, 1919).

Determination of the age of the bone artifact is difficult. So far it has not been possible to show whether it is contemporary with the Gimli beach of Lake Agassiz, which has been assigned an age of 4000 to 6500 years (Johnston, 1946), or with the draining of the lake to its present area which presumably occurred a good deal more recently.

Nor has it been possible to determine whether the bone was adzed into shape while it was still fresh or afterwards. In spite of its long burial in the prairie soil, it shows little or no mineralization.

Worked ivory from prehistoric sites has been reported on several occasions, but this is, as far as a reasonably careful search of the literature shows, the first occurrence of a definitely shaped bone of an extinct elephant, although Harold J. Cook reported mammoth bone, showing "many cutting and grooving marks," in Yuma County, Colorado, in 1929, which he believes to be "the first mammoth bone found in this country showing evidence of human implements or weapons having left their mark on the green bone" (Cook, 1931). Elephant bones showing knife marks were found also in Florida, at Winter Beach, in 1936 (Sellards, 1940, p. 385).

Jenks reports a knife and a tubular pipe of ivory (possibly walrus) from a gravel pit in the Campbell beach of glacial Lake Agassiz (Jenks, 1932), and Sellards records the tip of an elephant tusk showing tool marks from Vero, Florida (Sellards, 1916). Further south, at Tepexpan, about twenty miles northeast of Mexico City, deTerra was shown a crudely-carved human foot worked from an elephant tooth (deTerra, 1949).

Fig. 52, *a*. Maul of gneissic granite.

Fig. 52, *b*. Side-scraper and worked fragment of fine-grained chert.

Fig. 52, *c*. Two large choppers and quartzite core.

When I visited the site, in May, 1949, I made a careful search for artifacts and unworked stones in the vicinity. The man who made the original find is a singularly efficient farmer and he had cleaned the field thoroughly, removing all stones and piling them by the fence where they would be out of the way. I was able to find only ten pieces of chert, one of which is a small but well-made side-scraper. At least four others derive their shape from some stone working process, and all of them are foreign to the soil of that particular area.

When I searched the stone piles, I found more artifacts. There were two large choppers, a quartzite core, and several other objects of stone showing less obvious signs of having been worked. No projectile points, scrapers, pottery fragments, or other familiar artifacts have ever been collected in this particular field though they occur frequently in southern Manitoba.

Both the technique and the material are strongly reminiscent of a site, which I believe to be pre-ceramic, near Winnipeg. Until both these sites are properly excavated, it will be unsafe to do more than point out the resemblance between them.

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METALWORKING TOOLS FROM THE CENTRAL COAST OF PERU

Hammering and embossing are the most primitive forms of metalworking and they appear at the beginning of the history of Peruvian metals, but they have maintained their popularity in that country during all periods until the present. It is an archaeological characteristic of the coast of Peru that most copper or bronze objects were cast and that most gold and silver artifacts were hammered to shape. The Peruvians not only hammered flat surfaces but hollow goblets and even hollow figures of men and animals. These were made in various sections and were joined by solder, an art mastered at a very early period.

Some years ago we identified a Peruvian stone hammer for metalworking through historical descriptions found in Garcilasso de la Vega and Benzoni (Lothrop, 1938, pp. 13, 16, Fig. 2). The present paper describes a group of four hammers and six other tools found with them. In addition, there are five specimens which were discovered individually. All fifteen of these specimens are now in the Peabody Museum, Harvard University. The group of tools (Fig. 53, *b* and Fig. 55, *f-o*) probably came from the Huaura valley, perhaps from Vilcoshuarua itself, where a lot of unrecorded digging was in progress at the time they were secured. The other regions represented are Chimbote (Santa Valley), Cajamarquilla (Rimac Valley) and Pachacamac (Lurín Valley).

Garcilasso (Garcilasso de la Vega, 1869-71, Lib 2, cap. 28) wrote of the metalworkers of Cuzco that "they used certain very hard stones, of a color between green

Fig. 53. *a*, Peruvian smith using a rectangular hammer; *b*, small hammer with four working surfaces. Actual size.

and yellow, instead of anvils. They flattened and smoothed one against the other, and held them in great estimation because they were very rare. Nor could they make hammers with wooden handles. . . . These tools were the shape of dice with the corners rounded off. Some are large, so that the hand can just clasp them, others middling size, others small, and others lengthened out to hammer on a concave. They hold these hammers in their hands to strike with, as if they were pebbles."

Benzoni (Benzoni, 1857, p. 150) speaks of certain "black stones shaped on purpose" which served as hammers and his illustration (Fig. 53, *top*) suggests a roughly rectangular tool. Nordenskiöld (Nordenskiöld, 1921, Fig. 2 D) illustrates a somewhat different bronze hammer from northwestern Argentina, a type also mentioned by Garcilasso.

The hammer we have previously described and the specimen seen in Fig. 55, *n*, and also in Fig. 53, *b*, are of the black stone mentioned by Benzoni, a form of basalt. Two objects (Fig. 55, *f*, *m*) are of hematite and two (*i*, *o*) are of quartz, in one case formerly painted red. There are four examples of andesite (*g*, *k*, *l*, *n*) which, as its name implies, is the common lava of the Andes. They are gray or dark purple in color. All the others (Fig. 55, *a-e*, *h*, *j* and Fig. 54, *b*, *c*) are olive green in color, which presumably is the "colour between green and yellow" described by Garcilasso in the passage quoted. This rock has been identified as rhyolite, a dense and fine grained lava with crystals too small to be seen by the naked eye. This is the stone of which the Copan stelae are made, but the Peruvian variety is of a far finer color and quality, and most specimens have been highly polished.

Garcilasso, in the passage quoted, speaks of hammers varying in size and shape. The four specimens said to have been found together (Fig. 53, *b* and Fig. 54) weigh 1, 5, 14 and 36 ounces. The others are of intermediate sizes. The example in Fig. 53, *b*, was perhaps "lengthened out to hammer on a concave." The quartz specimen (Fig. 55, *o*, and Fig. 54, *a*) is comparatively narrow and shows signs of use.

The two big green examples in Fig. 54, *b*, *c*, are as smooth as ivory and are lovely things to handle. One can well understand why their owners "held them in great estimation." They exhibit nine and twelve flat working surfaces of various shapes and sizes. It will be noted that some of these surfaces are repeated, especially at the ends. None of them shows any signs of use. This is also true of the specimen from Pachacamac in Fig. 55, *b*, which is highly polished and a little darker than the others. The two hammers in Fig. 55 *a*, *e* are not of quite such fine grained stone as the rest. They both have been chipped at the corners.

How these complex instruments actually were used and the multiple functions of the various planes can only be a matter of speculation today. It is evident, however, that we are dealing with something far from primitive. These were the tools of expert craftsmen who knew just what they needed. It is also clear that control of these hammers could have been mastered only after a long apprenticeship. Placed in inexpert hands, it would not be possible to fabricate the paper-thin metal artifacts found in the Inca realm.

The other tools in Fig. 55 are of uncertain use because they have not been described historically. On the other hand, the presumption is strong that they were employed in metalworking because the specimen in Fig. 55, *f-o*, were found as a unit which included the definitely identified metalworking hammers. Two of these objects (*f*, *g*) are small cylinders with flat ends. They may have been employed as rollers to remove the marks of hammering. The larger specimen has a very smooth surface and sharp edges. The other is more crudely finished and obviously has been polished by use. The small object illustrated in *m* also is a burnisher and the small end shows signs of use.

Next to hammers the commonest tool has a pointed end presumably used for embossing. The points are not sharp enough for actually cutting the metal and we are in ignorance of how incising was accomplished on the Peruvian coast. The specimen in Fig. 55, *k*, is of hematite and shows signs of use at the point. The examples seen in *c*, *d* and *h* are of the green rhyolite which is characteristic of the hammers. The quartz specimen (*i*) is neatly made and was once painted red. The conical specimen with a flat base is the same shape as, but about a third the size of, wooden objects which were used as reels for thread. Specimens of these in the Museum are all from the central coast of Peru.

Fig. 55, *l*, illustrates an object which we cannot explain. It is a beautifully worked rectangle of purple andesite, two inches long and a quarter of an inch thick. It is so smooth to the touch and so sharply angled that it appears to be machine made. It could well serve as a whetstone for metal blades, but it exhibits no trace of use.

The instruments we have described and illustrated can scarcely be the full equipment of a Peruvian metalworker, for technical processes existed which could not have been accomplished with them. Among these we may mention utensils for incising and trimming, as well as the whole equipment for casting, including crucibles, tongs and blowing tubes. No artifacts of this kind have yet been identified but, in view of the vast collections now above ground, it seems probable that examples exist in our museums and their functions some day will be determined.

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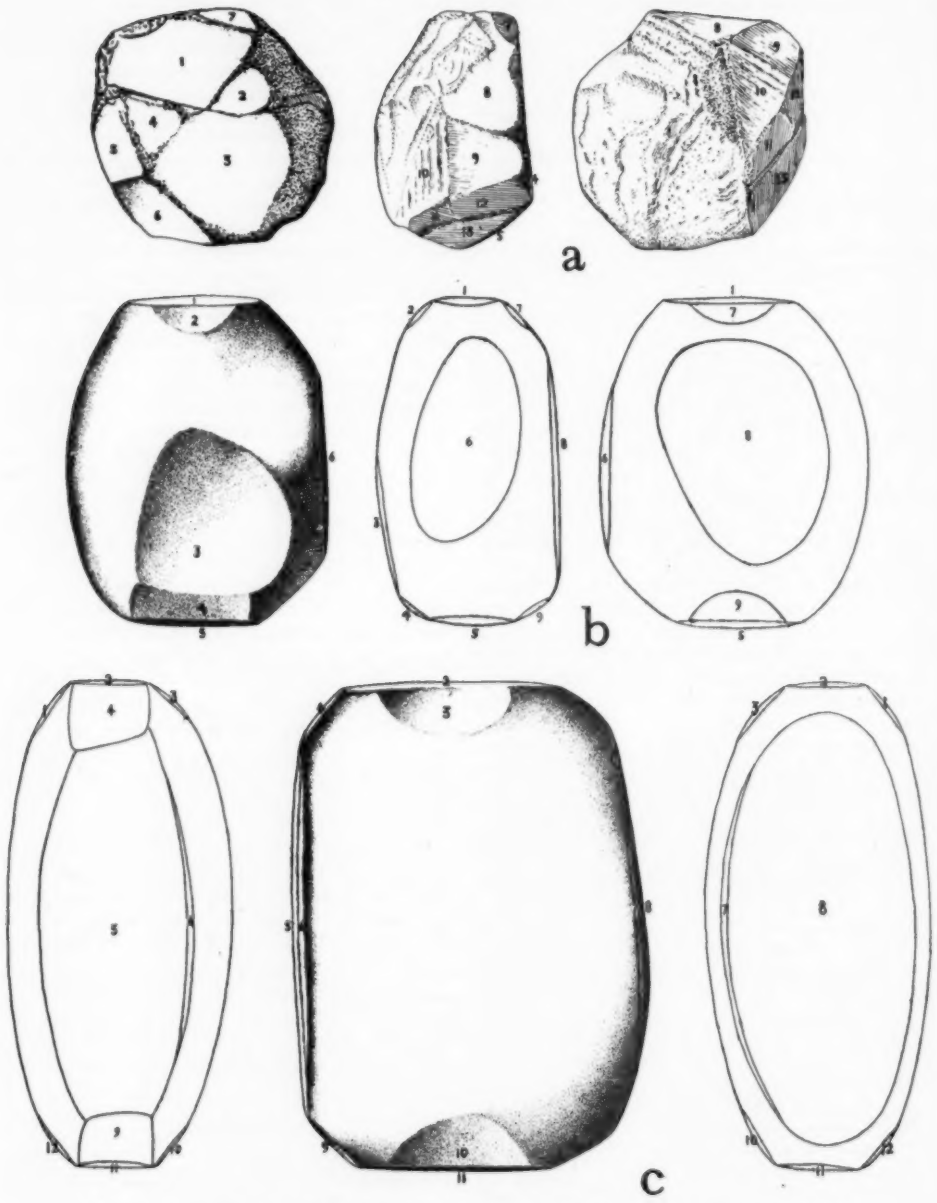

FIG. 54. Hammers of (*a*) quartz and (*b*, *c*) rhyolite showing the working surfaces. Scale, ¼.

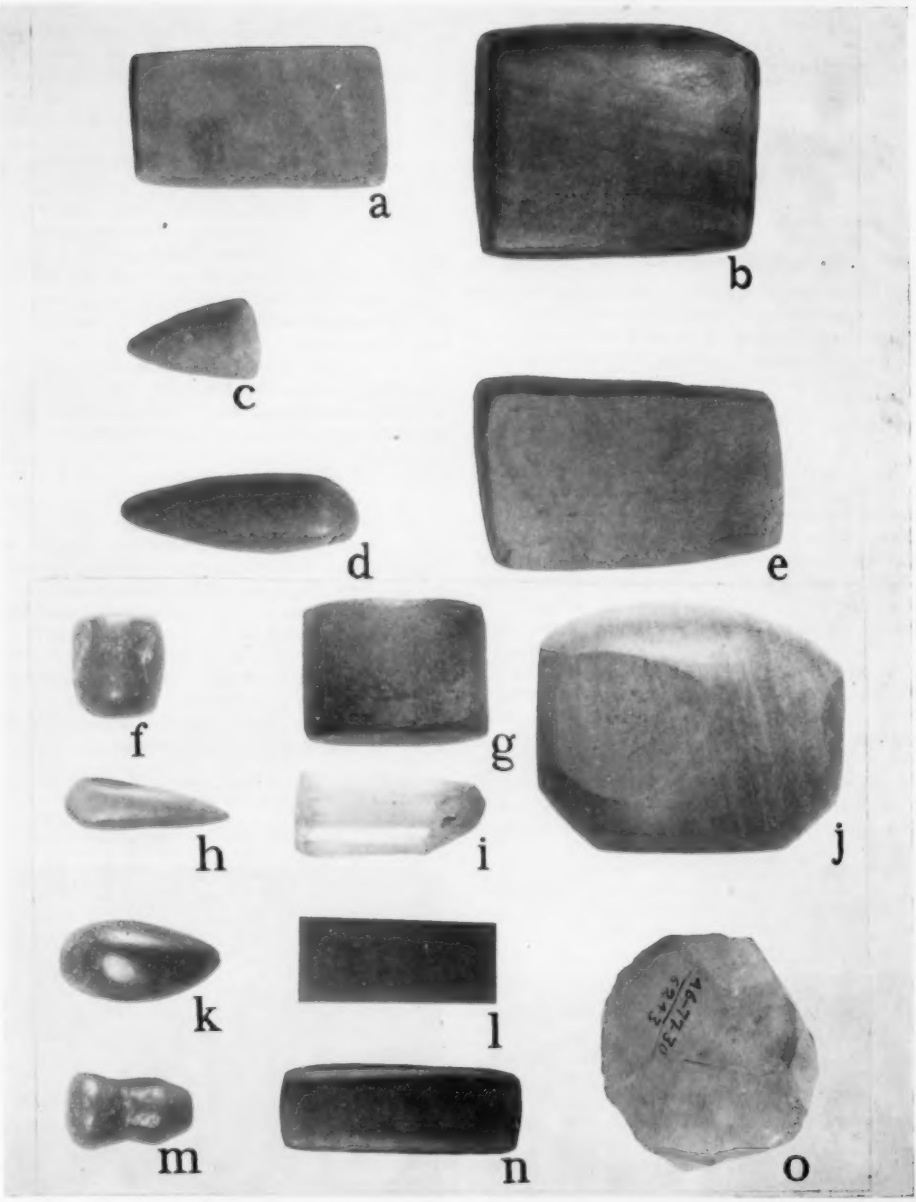

FIG. 55. Metalworking tools from the central coast of Peru. *b*, Pachacamac; *d*, Chimbote; *e*, Cajamarquilla; *f–o*, Huaura valley. Scale, ⅜. Photo Peabody Museum, Harvard University.

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SHELL OBJECT FROM MANITOBA

The shell object, illustrated in Fig. 56, was excavated on the Lowton site, Manitoba, (S.W. Sec. 26, T. 5, R. 16, W. 1st). The date of recovery was September 18, 1945; it was found in Excavation 3, lay at a depth of 15 inches below the surface, and was associated with common Lowton site material.

The object is 27 mm. long, 12 mm. wide at its point of greatest width, and is apparently the fragment of a slightly longer artifact. The shell is clam. It is difficult to make a positive identification; it seems likely, however, that the species is *Lampsiles ventricosa* common in the nearby Assiniboine River. The interior side of the shell fragment has been carefully and skillfully notched, partly in a series of three notches, the balance in a series of two notches. The pointed surface of the notches are worn smooth, suggesting considerable use.

At the time of excavation the object was assumed to be part of a roulett. Experiments with this tool and plastic modeling clay produced a design very similar to the rouletted pottery found on sites of the Rainy River aspect in Manitoba. That assumption may still be correct, in spite of the fact that the Lowton site is not a part of the Rainy River aspect, and rouletting entirely absent from the 6254 sherds so far excavated. Comment on the possible use of the object will be welcome.

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February, 1950

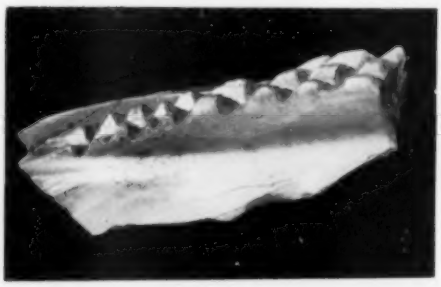

FIG. 56. Shell object from the Lowton site, Manitoba. Cat. No. 184. Photo by Richard Harrington.

AN OBLIQUE PARALLEL FLAKED POINT FROM MISSOURI

A point with oblique parallel flaking was found in an eroded field on high ground, 2½ miles north of the Missouri River near Kansas City, Mo. Chert flakes scattered over the site indicate occupation over several acres but no other artifacts from the site are now available for study. The location and the eroded condition of this site are similar to those of the Nebo Hill Complex (J. M. Shippee, *Nebo Hill, A Lithic Complex In Western Missouri*, American Antiquity, Vol. 14, No. 1, pp. 29-32, 1948), but nothing else links them except the presence of the light colored chert flakes.

In addition to the noticeable parallel flaking, this light buff colored chert point is heavily patinated on one side and has grinding on both edges for 35 mm. from the base. There is no grinding or thinning on the concave base. The point, here shown actual size, is 103 mm. long, 30 mm. wide and 7 mm. thick. Points of this type are rare in this area and this is the first one with oblique parallel flaking to be reported. Alex Krieger after seeing photographs of this point, wrote "Some of us doubt that oblique flaking is in itself diagnostic of any particular type or class of projectile points. Rather, it seems to be a refinement which occurs in some frequency on several distinct types of Late Pleistocene age and later. No frequency studies have been made, however, from this point of view. Since the other characteristics of your specimen agree with those of the Plainview type, I think it is an unusually well-chipped example of that type."

This point was found by Bob Phillips, killed in action on Okinawa in 1945. He showed it to J. H. Palmer and J. M. Shippee who were examining the site in 1931 and was advised to preserve it carefully. In May 1950 the point was again examined and photographed.

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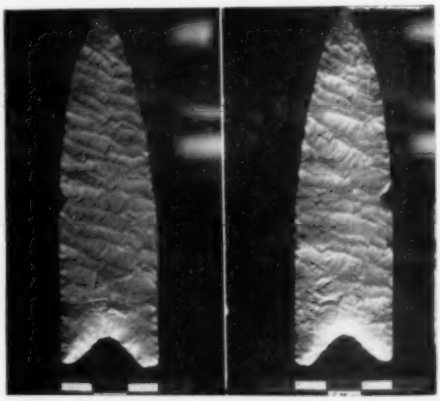

FIG. 57. Both sides of oblique parallel flaked point from Missouri. (Scale in CM)

COMMENTS ON SOUTH AMERICAN-ARCHAIC RELATIONS

The recent publication (Griffin, J. W., Ed., 1949) of a series of papers delivered at a conference held at Rollins College in 1949 demonstrates the increasing potentiality of synthesizing the data of American archaeology. It is undoubtedly to be expected that the preliminary stages of synthesis will lead to some conflict of opinion, but this should be regarded as a healthy sign of growing interest.

The problem of relationships between the Southeast and South America is discussed in the volume by Gordon R. Willey (1949), who considers the similarities between various Southeastern archaeological cultures and the South American culture types as established in the *Handbook of South American Indians* (Steward, 1949). Such an approach is an interesting one and can be particularly valuable in giving some insight into the historical development of the South American culture types. On the whole, however, it is unlikely that such a methodology can give valid conclusions as to historical relations *between* the two areas unless both culture types are on nearly the same time level. If we make a detailed comparison of the Marginal culture with the Southeastern Archaic, it must be principally on the basis of artifact types. Since the Marginal cultures of South America, as defined in the *Handbook*, would have had several thousand additional years in which to evolve, develop and borrow a variety of new tool types, it is not surprising that the material culture in the two regions is rather distinct. The objection to this approach utilizing two distinct time levels would, of course, not be valid if the objective were to determine functional similarities rather than historical relations.

Willey has stated his position as follows:

> The situation for interchange between the Archaic cultures of the Southeast and the Marginal cultures of the South American continent can be summed up by saying that there is no available evidence to indicate specific historical relationships. Resemblance seems largely due to the cultural poverty in both regions and to the basic techniques of subsistence of comparable culture stages. Items of material culture such as the throwing stick were probably possessed in both areas, but the distribution of these traits is so general that they have little connective value (1949, p. 107).

Immediately preceding the above quotation Willey indicates that the similarity between the Southeastern Archaic and South America is closest in pottery types which appear at the mouth of the Paraná River and in northern Pampean material. James B. Griffin has commented in the same volume (1949, p. 87) on the similarity of the pottery types. Willey, however, feels that the wide geographic gap between the Paraná River and the Southeast in which no similar types are found weakens the case for any historical connections. The important feature, however, is that similarities were seen between the two regions, not in a comparison with a general marginal culture, but in a comparison with specific archaeological material in the South American area. We should expect the similarities to increase as we go back in time in South America to a period when Archaic influences on South American culture might be expected, or when migrations might have taken place.

The lower Paraná River, where the similar pottery types were found, provides a convenient point for an examination of actual cultural similarities. When attention is directed beyond ceramics, we do find marked similarities in specific implement types shared with the Archaic. Of greatest interest, among three sites excavated by Lothrop (1932), is the site of El Cerillo which through the absence of trade material as well as painted pottery suggests a somewhat earlier time horizon than the others, though it is still thought to be quite late. The artifact series is dominated by a bone industry. Eliminating such items as bone awls because of their wide distribution, we still find a rather important series of traits having parallels in the Southeast. These include: (1) bone awls with hole drilled in base ("needles"); (2) antler points ("fish-stringers"); (3) bone spearpoint with an open socket at base, and occasionally rivet holes; (4) double-tapering bone points; (5) antler shaft-straightener. All of these artifact types can be duplicated in Archaic sites of the Southeast, and some are of rather distinctive form so that they can not be easily dismissed despite the broad spatial gap between the two regions in which they are found. In this area, too, bone atlatl hooks have been found and while they are not of the same form as those commonly found in Southeastern Archaic sites, at least it leaves no question as to the actual presence of the throwing stick in both areas and further that both were composite bone and wood types.

An interesting cluster of traits comparable to those mentioned above for the El Cerillo site can be found in the Tchefuncte culture of Louisiana (Ford and Quimby, 1945). The antler points which Lothrop identifies as fish-stringers are not too different from the antler points of Tchefuncte having a perforation in the side. Large socketed points are present in both cultures, Tchefuncte even duplicating the rivet hole. Double-tapering bone points are also present in both cultures. We obviously do not have two identical complexes here since we have selected only a few traits from both cultures, but the material from some of the Tchefuncte middens represents a late Archaic phase just as El Cerillo represents a late culture complex in South America. In both instances we may have a survival from an earlier period when a single, or several Archaic complexes had diffused from one region to the other. If adequate information on temporal depth were available for the South American area, perhaps many of the other traits of the region such as the chipped stone implement types, full-grooved axes and even such material as the plummets and grooved bolas weights from the Sambaquis of Brazil could be integrated into a definite Archaic complex. That we can not do so at present is perhaps not entirely the fault of the inadequate South American data. So far as the Archaic of the United States is concerned, more attention appears to have been paid to the definition of regional complexes, often at the expense of com-

pressing temporal changes, than has been paid to the development of complexes which spread within the Archaic throughout the Southeast.

Though we must conclude, as did Willey, that there is no available evidence to indicate specific historical relationships, it is still possible to strike a more optimistic note. The specific items of material culture shared by some prehistoric Marginal peoples and the Archaic of the Southeast, suggest the existence of historical contacts in the past. It seems quite probable that with further research culture complexes which spread from one region to the other will be defined.

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March, 1950

THE KATUN CALENDAR OF THE BOOK OF TIZIMIN

In September 1949 I presented a short paper at the International Congress of Americanists in which I claimed that the calendar outlined in the first 14 pages of the Book of Chilam Balam of Tizimin corroborated my correlation between the Maya and Christian time-counts. The new correlation, derived from astronomical data in the Dresden Codex, equates 13.0.0.0.0 to B. C. 3374 March 10 Julian. Spinden's "Ahau Equation" places the basic date 246 *days* later, whereas the Goodman-Thompson correlation places it 260 *years* later, at B. C. 3114 September 7. At the close of the paper, Mr. Linton Satterthwaite, Jr. kindly remarked that archaeologists would reserve judgment until a translation of the Book of Chilam Balam of Tizimin was published.

As my own translation is still some distance from publication, I find it most opportune that a translation of the first 13 pages of the manuscript has recently appeared in print. It is the work of Ralph L. Roys and is entitled, "The Prophecies of the Maya tuns or Years in the Books of Chilam Balam of Tizimin and Mani" (Carnegie Institution of Washington Pub. No. 585, pp. 153-186. Washington, 1949).

Beginning with a year 13 Kan, stated to be current during 1593, these pages enumerate the following relations between the 360-day tuns and the 365-day years, the page numbers referring to Roys' publication:

p. 169: "7 Cauac the time, at the 7th tun, on 1 Pop."
"On 8 Kan, 1 Pop, in the 8th tun it would be."

p. 172: "11 Cauac, 1 Pop, is in the 11th katun (tun)."
"[In the 12th tun, in the time of 12 Kan 1 Pop]." The brackets indicate that these words were supplied from the Mani version.

p. 173: "In the 13th tun is when 13 Muluc is on 1 Pop."
"In the 14th [tun is when 1 Ix is] on 1 Pop."

p. 174: "In the 15th [tun], the time of Lord 2 Cauac on 1 Pop."
"In the 16th tun, at that time Lord 3 Kan would be on 1 Pop."

p. 175: "In the [17th] tun on [4] Muluc. . . ."
"At the arrival of the charge of the time of Lord 5 Ix in the 18th tun. . . ."

p. 176: "6 Cauac in Tun 19 is when. . . ."
"It should be in 7 Kan, the time of its ending . . ." i.e., the end of Katun 5 Ahau.

p. 177: "8 Muluc on 1 Pop is the sunken stone. . . . at the taking of the bowl of Lord 3 Ahau . . ." i.e., the inauguration of Katun 3 Ahau.

Collecting and tabulating these relationships and filling in the gaps, we may reconstruct the Katun calendar as presented in Table 1, in which the parentheses indicate that a given quantity is implicit but not expressed in the manuscript.

Table 10. The Calendar of Katun 5 Ahau

Year	*Year-bearer*	*Tun Number*
1593	13 Kan	(20)
(1594)	1 Muluc	(1)
(1595)	(2 Ix)	(2)
(1596)	3 Cauac	(3)
(1597)	4 Kan	(4)
(1598)	5 Muluc	(5)
(1599)	6 Ix	(6)
(1600)	7 Cauac	7
(1601)	8 Kan	8
(1602)	9 Muluc	" 5 Ahau "
(1603)	10 Ix	(10)
(1604)	11 Cauac	11
(1605)	12 Kan	12
(1606)	13 Muluc	13
(1607)	(1 Ix)	14
(1608)	2 Cauac	15
(1609)	3 Kan	16
(1610)	4 Muluc	17
(1611)	5 Ix	18
(1612)	6 Cauac	19
(1613)	7 Kan	(20)
(1614)	8 Muluc	(1)

Note that the tuns are numbered in *current* time.

Table 1 clearly indicates that a Katun 5 Ahau was considered as beginning in 1594 1 Muluc and ending in 1614 8 Muluc. We cannot agree, therefore, with Roys' comment on page 158:

"This katun is, in a way, a fictitious one, for it is alleged to begin in a year 13 Kan, which is said to have fallen in the years 1593-94. It is quite true that a year 13 Kan began in 1593, but no Katun 5 Ahau could have begun or ended in such a year within a reasonable range of Maya history. A Katun 5 Ahau did begin in 1599, and its last day, from which it took its name, fell in 1618." A year 6 Ix was current in 1599.

The points in this statement which I challenge are: (1) that the Tizimin Katun is a fictitious one, (2) that it is alleged to begin in a year 13 Kan, (3) that no Katun 5 Ahau could have begun or ended in 1593-94, (4) that a Katun 5 Ahau did begin in 1599.

Roys' statement depends entirely upon the Goodman-Thompson correlation. If that is correct, his statement is valid; but is it wise to deny without careful examination and evaluation any new and independent evidence, particularly when it comes from the writings of the Maya themselves? On the contrary, each fragment of information pertaining to the calendar should be fitted into the previous structure of our knowledge, even if it eventually requires the remodeling of that structure.

We will now try to show that the Katun 5 Ahau which began in 1594 1 Muluc was real, and that it coincides with a certain Katun 5 Ahau given by the Makemson correlation. Tables 11 and 12 present the Katuns 5 Ahau nearest to the Tizimin dates as given by the Goodman-Thompson and the new correlations respectively.

TABLE 11. KATUN 5 AHAU IN THE GOODMAN-THOMPSON CORRELATION

Complete Maya Date				*Date Julian*			*New Year's Day*		
11.19. 0.0.0	7	Ahau	13 Chen	1598	Dec.	24	5 Muluc	July	5
11.19. 1.0.0	3	"	8 "	1599	"	19	6 Ix	"	5
11.19. 2.0.0	12	"	3 "	1600	"	13	7 Cauac	"	4
11.19. 3.0.0	8	"	18 Mol	1601	"	8	8 Kan	"	4
11.19. 4.0.0	4	"	13 "	1602	"	3	9 Muluc	"	4
11.19. 5.0.0	13	"	8 "	1603	Nov.	28	10 Ix	"	4
11.19. 6.0.0	9	"	3 "	1604	"	22	11 Cauac	"	3
11.19. 7.0.0	5	"	18 Yaxkin	1605	"	17	12 Kan	"	3
11.19. 8.0.0	1	"	13 "	1606	"	12	13 Muluc	"	3
11.19. 9.0.0	10	"	8 "	1607	"	7	1 Ix	"	3
11.19.10.0.0	6	"	3 "	1608	"	1	2 Cauac	"	2
11.19.11.0.0	2	"	18 Xul	1609	Oct.	27	3 Kan	"	2
11.19.12.0.0	11	"	13 "	1610	"	22	4 Muluc	"	2
11.19.13.0.0	7	"	8 "	1611	"	17	5 Ix	"	2
11.19.14.0.0	3	"	3 "	1612	"	11	6 Cauac	"	1
11.19.15.0.0	12	"	18 Tzec	1613	"	6	7 Kan	"	1
11.19.16.0.0	8	"	13 "	1614	"	1	8 Muluc	"	1
11.19.17.0.0	4	"	8 "	1615	Sept.	26	9 Ix	June	30
11.19.18.0.0	13	"	3 "	1616	"	20	10 Cauac	"	30
11.19.19.0.0	9	"	18 Zotz	1617	"	15	11 Kan	"	30
12. 0. 0.0.0	5	"	13 "	1618	"	10	12 Muluc	"	30

TABLE 12. KATUN 5 AHAU IN THE MAKEMSON CORRELATION

Complete Maya Date				*Date Julian*			*New Year's Day*		
12.11.19.0.0	11	Ahau	18 Kayab	1593	Oct.	4	13 Kan	1592 Nov.	2
12.12. 0.0.0	7	"	13 "	1594	Sep.	29	1 Muluc	1593 "	2
12.12. 1.0.0	3	"	8 "	1595	"	24	2 Ix	1594 "	2
12.12. 2.0.0	12	"	3 "	1596	"	18	3 Cauac	1595 "	2
12.12. 3.0.0	8	"	18 Pax	1597	"	13	4 Kan	1596 "	1
12.12. 4.0.0	4	"	13 "	1598	"	8	5 Muluc	1597 "	1
12.12. 5.0.0	13	"	8 "	1599	"	3	6 Ix	1598 "	1
12.12. 6.0.0	9	"	3 "	1600	Aug.	28	7 Cauac	1599 "	1
12.12. 7.0.0	5	"	18 Muan	1601	"	23	8 Kan	1600 Oct.	31
12.12. 8.0.0	1	"	13 "	1602	"	18	9 Muluc	1601 "	31
12.12. 9.0.0	10	"	8 "	1603	"	13	10 Ix	1602 "	31
12.12.10.0.0	6	"	3 "	1604	"	7	11 Cauac	1603 "	31
12.12.11.0.0	2	"	18 Kankin	1605	"	2	12 Kan	1604 "	30
12.12.12.0.0	11	"	13 "	1606	July	28	13 Muluc	1605 "	30
12.12.13.0.0	7	"	8 "	1607	"	23	1 Ix	1606 "	30
12.12.14.0.0	3	"	3 "	1608	"	17	2 Cauac	1607 "	30
12.12.15.0.0	12	"	18 Mac	1609	"	12	3 Kan	1608 "	29
12.12.16.0.0	8	"	13 "	1610	"	7	4 Muluc	1609 "	29
12.12.17.0.0	4	"	8 "	1611	"	2	5 Ix	1610 "	29
12.12.18.0.0	13	"	3 "	1612	June	26	6 Cauac	1611 "	29
12.12.19.0.0	9	"	18 Ceh	1613	"	21	7 Kan	1612 "	28
12.13. 0.0.0	5	"	13 "	1614	"	16	8 Muluc	1613 "	28

A comparison between Table 10 and Table 12 shows that the relationship between tun-numbers and year-bearers is the same in both. For if we rewrite the first three tuns as follows:

Tun 1 1594 Sp. to 1595 Sp.	Year 1 Muluc 1593 Nv. to 1594 Nv.
Tun 2 1595 Sp. to 1596 Sp.	Year 2 Ix 1594 Nv. to 1595 Nv.
Tun 3 1596 Sp. to 1597 Sp.	Year 3 Cauac 1595 Nv. to 1596 Nv.

we find that Tun 1 began in a year 1 Muluc, Tun 2 in a year 2 Ix, and so on. Table 11 does not exhibit this striking similarity between the tun-number and the year-bearer's coefficient.

To illustrate the uncertainty inherent in the translation of even a simple Maya sentence, I quote the words at the beginning of the first new paragragh on page 5 of the manuscript:

"ti bolon muluc, tu hun te pop, talom tun yal kaba ho ahau, u yalic u than."

Roys (p. 169) renders this: "On 9 Muluc, 1 Pop, shall then come the declaring of the name (or title) of 5 Ahau. He declares his law . . . . "

My own translation is: "When 9 Muluc [falls] on the first of Pop, there will come the *tun* called 5 Ahau, as it is said in our language."

The chief divergence between the two interpretations comes from the word *tun*, which may signify "then" as in Roys' translation, or a *tun* of 360 days, as in my version.

This apparently trivial matter has a bearing on the correlation problem because, as can be seen in Table 12, there was a Tun-day 5 Ahau on August 23, 1601, and a year 9 Muluc began on October 31, 1601. If, therefore, the tun was named for its beginning day, as may be inferred by analogy with the 365-day count which it approximates, there was a Tun 5 Ahau which fell for the

most part within a Year 9 Muluc. In the Goodman-Thompson correlation, on the other hand, Tun 5 Ahau fell partly in a Year 12 Kan and partly in a Year 13 Muluc. The procedure of naming a tun for its beginning-day appears to be consistent with the practice of *numbering* the tuns in *current* time, which was pointed out at the end of Table 10.

The importance of these pages of the Tizimin manuscript for testing a correlation can hardly be overemphasized in view of the well-known scarcity of independent data on the calendar and its ramifications.

Table 12 ends with the date: 12.13.0.0.0 5 Ahau 13 Ceh, in a Year 8 Muluc.

The tzolkin-day 5 Ahau can end a katun once in 13 katuns or 93,600 days. Likewise, 8 Muluc occurs as a year-bearer once every 52 years or 18,980 days. To determine how often a particular combination of katun-day and year-bearer can occur, one must find the least common multiple of 93,600 and 18,980 days. This number, when divided by 365, yields *18,720 vague years* as the interval which must elapse before a certain combination of year-bearer and katun-ending day can be repeated.

That a correlation derived on astronomical grounds should *accidentally* produce a calendar in complete agreement with this count of katuns, tuns, Maya years and Julian years given in the Tizimin manuscript, or conversely that the Maya of the 17th century should have constructed a fictitious katun which agreed exactly with one independently derived in the 20th century are hypotheses beyond the range of credibility.

Table 12 shows, moreover, that the Katun 5 Ahau given by the new correlation ran from 12.12.0.0.0 to 12.13.0.0.0. On page 14 of the Tizimin manuscript is a passage, not included in Roys' translation, which reads:

"tu lahcapis katun, yalah u kaba, lai uile balam u pol."

This becomes in translation: "In the twelfth katun, as it is called, the Jaguar should be the head." The context shows that this page belongs with the previous ones and that the reference is to Katun 5 Ahau. If my interpretation is correct, "the twelfth katun" ran from 12.12.0.0.0 to 12.13.0.0.0 indicating that the katuns were numbered in *elapsed* time. Katun 1, for example, would be pictured as running from 12.1.0.0.0 to 12.2.0.0.0. (Mr. Ralph L. Roys who kindly read this paper comments: "In the Books of Chilam Balam the '12th katun' seems to refer plainly to the katun of that number in a series of 13 katuns, the so-called katun round, which is a different computation from that found in the Initial Series, although it is not inconsistent with it." In my own opinion, this became the practice only after the Long Count became lost in the late 17th century.) The naming of katuns for their ending-days and the numbering of tuns in current time are independent of any correlation used. If the new correlation is correct, the tuns were named for their beginning-days and the katuns were numbered in elapsed time, as we have shown. The scheme is as follows:

katuns:	elapsed time	ending-day
tuns:	current time	beginning-day

The Tizimin manuscript later describes the confusion of the calendar and the innovation in 1752 of 24-year katuns which were named for their beginning-days. That the Katun 5 Ahau starting in 1594 was not fictitious but part of the ancient calendar is also borne out by the fact that it is consistent with a Katun-day 4 Ahau which is said to have fallen in 1752 in a year 3 Cauac. Reference is made to this Katun 4 Ahau on page 33, and on pages 35 and 36 the 24 years comprising the katun are enumerated, starting in 1752. It is surely significant that the new correlation makes a Katun-ending day 4 Ahau coincide with June 22, 1752.

The manuscript describes Katun 4 Ahau as the "katun for remembering knowledge and recording it in annals." It was then, probably, that the compilations of old and new writings known as the Books of Chilam Balam were made.

Roys' translation ends with the following sentence from page 13: "I completed putting it in writing on 18 Zac, on 11 Chuen . . . . on the 15th day of February in the year 1544."

This "double date," which is entirely inconsistent with the calendar of the previous pages, has been often quoted as a corroboration of the Goodman-Thompson correlation. Roys, however, appends the wise caution: "I do not know how early Maya began to be written in European letters; the first example we know is dated 1557. Certainly it was not done as early as 1544, and a correlation of Christian and Maya dates at this time seems quite impossible."

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April, 1950

BOOK REVIEWS

The Science of Culture. A Study of Man and Civilization. LESLIE A. WHITE. New York: Farrar, Straus, 1949. 444 pages, $6.00.

For more than a decade Leslie A. White has authored a series of vigorous articles that appeared in a variety of professional journals. These articles were oriented toward cultural evolution and were published at a time when cultural evolution was the target of many a learned sling and arrow. One might expect that these articles would have been couched in defensive terms; they were not. In fact, one editor returned a manuscript with the comment, "Too polemic!" Hence, the appearance of this book is a recognition of the intellectual stature and purposefulness of the author. The several honors and lectureships which have come to him in recent years are also a reflection of the maturity of his ideas and a respect for his theories. A former student, now a member of the editorial staff of the publishers, suggested to White that some of his articles might be reprinted in a single volume. From that suggestion came this book.

In order to bring coherence and unity to the book some modifications have been made in the original articles but these changes are not significant. The book is organized into four parts: I, Science and Symbols; II, Man and Culture; III, Energy and Civilization; and IV, Culturology. Part I includes five well-known papers, among which are *Science is Sciencing* and *The Symbol: The Origin and Basis of Human Behavior.* In the opinion of the reviewer this latter chapter contains White's lasting contribution to anthropology; the definitive treatment of the symbolling faculty of man. No one else has so incisively stated the difference between human behavior and animal behavior; the former occurs in a context that consists of or is dependent upon the use of symbols; the latter does not. The third chapter, *On the Use of Tools by Primates,* in part pursues and further illustrates this same theme. Chapter Four, *Mind is Minding,* disposes of the mind-body problem. Chapter Five, *The Expansion of the Scope of Science,* is longer than the first four combined and very aptly develops the genesis and growth of the sciences. Fields of science did not mature in order of their simplicity, but rather in order of their remoteness from human behavior. Thus astronomy matured first because its problems are least concerned with determinants of human behavior. Sociology has developed only recently, but most sociologists have failed to recognize sociology as anything beyond a science of group behavior. This fact largely has led to the formalizing of a new field of science whose point of view is supra-psychological—the science of culture.

In Part II there are seven essays, five of which have been previously published. One of the two new chapters is *Cultural Determinants of Mind* which, with the chapter *Culturological vs. Psychological Interpretations of Human Behavior,* regards the problem of distinguishing between mind (psychology) and culture (culturology). The second previously unpublished chapter, *Genius: Its Causes and Incidence,* is presented with *Ikhnatan: The Great Man vs. The Culture Process* to explore and render intelligible the Great-man-in-human affairs theme. Two concise chapters, *The Locus of Mathematical Reality* and *The Definition and Prohibition of Incest,* are included by the author to "provide demonstrations of the technique of culturological interpretation of two major sectors of human experience, the intellectual and the social." The remaining work in Part II is *Man's Control over Civilization: An Anthropocentric Illusion* first published in *The Scientific Monthly* in 1948, although additional material has been incorporated into the present essay.

Part III is one rather lengthy chapter, *Energy and the Evolution of Culture,* a complete rewrite of the earlier article of the same name published in *The American Anthropologist.* In this treatise the author reduces to mathematical simplicity the technological aspect of culture and derives a relationship among the amount of energy utilized, the manner in which it is expended, and the cultural products accruing therefrom. It is the first concise statement on the cause and nature of culture growth and behavior. It is a sketch of the evolution of culture as a whole.

Finally, Part IV contains a single short chapter, *The Science of Culture,* in which is defined and oriented among other sciences the new science of culturology. The essence of culturological interpretations of socio-political-economic phenomena may be epitomized by the following excerpts:

> From the standpoint of an explanation of human behavior, we proceed as though culture had a life of its own, even as if it had an existence of its own independently of the human species. . . . Cultures can no more exist without man than vehicles can move without friction. But one may regard culture as if it were independent of man just as the physicist may consider vehicles as if they were independent of friction. . . . Any given cultural situation has been determined by other cultural events. If certain cultural factors are operative, a certain result will eventuate. Contrariwise, certain cultural consummations cannot be realized, however devoutly they may be wished, unless the factors requisite to the consummation are present and operative.

This chapter goes far toward laying the axe to the root of such statements that "Cultural evolution may be applicable to material objects but not to social phenomena."

Because nearly all of the chapters of this book were reviewed when the several articles individually appeared, it seems almost redundant to attempt an analysis of them at this point. To those who would rather be White than President, the critical reviews that have appeared are superfluous anyway. None the less, few authors have so roiled the waters of complacent acceptance of anthropocentric social theories. It seems inevitable that this book will have a more profound and lasting effect than just being the subject of many seminars.

A final word about the format of the book may be pertinent. The print is quite readable and the binding adequate but I personally object to Copper Plate Gothic type for running heads. Its boldness is distracting. Printing costs are certainly excessive but the six-dollar price will keep it out of the hands of many students—and faculty.

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Andean Culture History. WENDELL C. BENNETT and JUNIUS B. BIRD. American Museum of Natural History, Handbook Series, No. 15. New York, 1949. 319 pp., 57 figs. including maps and a table, bibliography and index. $3.25.

Andean Culture History is an excellent synthesis of Peruvian archaeology expertly presented in its total South American context by two of the men who have contributed most to its development through their excavations. It is designed primarily as an introduction to the subject and is the best available work to introduce the student to Andean prehistory. Its systematic arrangement, excellent illustrations and well chosen reading list recommend it especially for this purpose. The text is divided into three parts. Part 1, "The Setting," by Bennett, is a summary of the archaeology and ethnology of the whole continent as a background for the other parts. Part 2, "The Central Andes," also by Bennett, is the heart of the book. Peruvian archaeology is presented in the form of a reconstruction of culture history arranged on a framework of seven major time periods with a note added on Colonial and modern developments. Part 3, "Techniques," is by Bird; it contains a discussion of Andean ceramics, metallurgy and textiles from a technical point of view. The textile section is the longest, reflecting Bird's special interest and competence in this field, and it is a masterpiece of simple presentation of a very complex subject. The American Museum is to be congratulated on an outstanding addition to its famous Handbook Series.

The authors of this book are men of such stature, however, that their views on the general interpretation of Andean archaeology and on its more controversial special problems carry a great deal of professional weight and should be discussed on a professional level. Having expressed my approval of the book as an introductory manual, I want to state some dissenting reactions to the sections by Bennett and especially to the archaeological picture presented in Part 2. The following observations should be read as criticisms of ideas and their presentation, not of the author; I am well aware that many of the concepts discussed originated with other investigators, especially Kroeber and Willey, and that some of them are the common property of present day Andeanists. One of the great contributions of a synthesis such as Bennett offers is that it makes possible constructive criticism of the whole field covered.

The general frame of reference of Part 2 is a spatial division of the Central Andes into six archaeological regions and a chronological division into seven named major time periods. This framework is made explicit in the table on p. 112. For the spatial division, Bennett has evidently abandoned the areas which he proposed in 1948 (SAA-M No. 4, p. 5) in favor of those proposed by Gordon Willey (ibid., p. 9). Willey's areas represent the archaeological divisions of the Peruvian coast between Chicama and Nazca pretty well, in the sense that within each area culture was rather uniform in any given period. The extreme north and south parts of the coast are less well known archaeologically and are ignored in Willey's and Bennett's tables. The highland regions, however, have no demonstrable archaeological unity. To place Huari ("Wari") and "Chanka" in the same region with Cuzco is rather like putting Paracas in a single area unit with Moche. Huari is characterized by an obviously Tiahuanacoid style, and, as Bennett points out (p. 200), the Cuzco region apparently remained totally independent of Tiahuanaco influence. The "Central Highland" area should be divided into at least two regions: Mantaro-Andahuaylas and Apurimac-Cuzco; when more is known of the archaeology of this area further division of the Mantaro-Andahuaylas region may be necessary. The "South Highland" area is also sharply divided in some archaeological periods, especially when the Pucará and Tiahuanaco cultures occupied opposite ends of the Titicaca basin; this area would be better treated as two, Puno and Tiahuanaco. My colleague, T. D. McCown, has similar reservations regarding the unity of Bennett's North Highland area.

The chronological framework for the presentation of all of Central Andean archaeology is a sequence of named major periods which were conceived and defined in terms of the ceramic sequence of the Virú and Chicama valleys as worked out by the Virú Valley Project (1946-47). The idea of such a set of period names, each aiming at describing a "developmental stage" of North Coast culture, is said by Strong to have been originated by Rafael Larco (SAA-M No. 4, p. 100). It was taken up by several participants in the Virú project and alternative sets of names suggested by Bennett, Strong, Willey, and Steward (SAA-M No. 4, pp. 9, 114, etc.). Each set differs slightly from the others in the points of division between periods and in the names chosen but all are based directly on the Virú sequence and on no other. Willey and Bennett, however, have gone on to apply their period names to all of the Central Andean region, apparently without noting that they are spectacularly unsuited to any area in southern Peru. We can grant them the Central Coast, where a well established sequence parallels the North Coast one very closely, and they may be justified in the inferred chronology of the North Highlands, which is built up by comparing local highland styles to North Coast ones, but on the South Coast and in the Central and South Highlands the local picture is entirely different.

The South Coast is a good example. The Paracas Cavernas style shows the feline designs which Willey and Bennett use as the mark of the Chavín Horizon (SAA-M No. 4, p. 10; work under review, p. 108) but it also uses negative painting which is the mark of another horizon style which Bennett places three to four hundred years after Chavín on the North Coast. Apparently the Chavín and Negative Horizons are indistinguishable chronologically on the South Coast and there is no White on Red or local style between them. Bennett's solution in his table is to shade the top of the Cavernas block to indicate Negative Horizon influences and the bottom to indicate Chavín influences; this procedure amounts to clutching at straws to preserve his framework. In the present state of our knowledge there is no reason to believe that the negative Cavernas ware is anything but contemporary with the incised and painted pieces, nor any reason for separating the ones which have feline designs from the ones that do not.

Cavernas is presumably followed on the South Coast by Nazca (including Necropolis). In his text (pp. 179-180) Bennett lists Nazca-Necropolis under his Mastercraftsman Period, but in his table, in order to avoid a gap, he puts Necropolis and Nazca A in the Experimenter Period, leaving only Nazca B for the Mastercraftsman division. The inconsistency involves a matter of some 200 years on Bennett's scale.

Coast Tiahuanaco ("Pacheco" in the table) which follows Nazca fits in with the North Coast picture better than any other southern period, but even so there are some grounds for thinking that it began somewhat earlier in the south than in the north.

I am somewhat mystified as to why Middle Ica is shaded with the hatching of the Black-White-Red Horizon, though I agree that it is probably contemporary, at least in part. Late Ica, however, is out of place in the table. Both the Late Ica styles described by Strong and Kroeber from the Uhle collections had either Inca or Spanish artifacts associated with them in the graves. One suspects that Middle Ica gave way to Late Ica very shortly before the Inca conquest, again an awkward division in terms of the North Coast scale.

There is no need to discuss the relationships of the Central and South Highland periods in detail since a glance at the two right hand columns of Bennett's table will make the discrepancies in terms of the major time divisions sufficiently clear. These discrepancies become even greater if the two areas are redivided as suggested above. It may be noted, parenthetically, however, that there is no evidence for Classic Tiahuanaco succeeding Pucará in the Puno area. The relationships between Pucará and Tiahuanaco have been worked out by Bennett himself (SAA-M No. 4, p. 91).

What has apparently happened is that, in a desire to simplify the complexities of Andean archaeology, the over-all unity of the Central Andean area has been greatly exaggerated, especially by Kroeber (e.g., VF-PA No. 4), Willey and Bennett. There is no question that the whole area was unified under the Incas but for earlier periods the evidence is not so clear. The earlier horizon styles are a case in point: defining the Chavín Horizon as Willey and Bennett do in terms of a feline design, it is found nowhere in southern Peru except at Paracas. If it is redefined on a basis of the association of incised designs with certain other technological characteristics of the pottery, a horizon style which may be called Incised Horizon could be set up to include the Chavín materials, Cavernas, Chanapata, Chiripa and Pucará, but in that case it might also have to include styles outside of the Central Andes region such as Barreales in Argentina. Also, in that case, it would include materials 1000 to 1500 years apart in age. The Tiahuanaco horizon apparently does not appear in the Cuzco area or on the far North Coast; it is extremely weak in Puno. On the other hand, it apparently occurs in northern Chile, a region not usually included in the Central Andes (p. 91). Bennett's other horizon styles have clearly local distributions.

The best solution to the problem of synthesizing the data of Andean archaeology for elementary presentation would probably be to describe the North Coast sequence, indicating differences in the essentially parallel North Highlands and Central Coast areas, and then describe the South Coast and Tiahuanaco sequences separately with notes on the incomplete information available for other Southern Peruvian areas tied to these two. The rather aberrant Cuzco sequence could be treated as a prelude to the description of the Incas.

In addition to these general problems of space and time, there are a few points of a more specific nature that deserve comment.

Bennett apparently intends the break between Early Farmers and Cultists to coincide with the appearance of pottery in Virú and Chicama; the Guañape period which he includes as Cultist in the table is, if I understand the preliminary reports on the Virú Project correctly, the first pottery period in Virú. But in the text (p. 121) he describes the earliest pottery and the appearance of adobe construction in the section on Early Farmers, and the only pottery described under Cultists is Cupisnique. Of course, the particular pottery described on p. 121 is not the Guañape of Virú but the earliest pottery found by Bird in Chicama, just north of Huaca Prieta (SAA-M No. 4, pp. 25-27). Still, one gathers from Bird's account that he considers this ware to be roughly contemporary with Guañape. If it is not, we need some clarification of the point and some mention of Guañape pottery should be included in the Cultist section.

The statement on p. 181 that "The Mastercraftsman Period in general marks the culmination of technological advancement . . . and attention was shifted to the control of man units rather than the development of additional techniques" is open to some question. This is a matter of emphasis, but what about such later developments as fine tapestry, silver plating, two new alloys and the cutting of huge stone blocks in the Expansionist Period (pp. 186, 198); bronze, and with it the wide

use of metal for tools, in the City Builder Period (pp. 212-13); and lacquer inlay and new 'metallurgical techniques in the Imperialist Period (p. 229)? And are not all quipus from graves of the later periods?

The statement on p. 175 that "The Mochica seem to have had an ideographic type of writing" represents a serious critical lapse. It is based on a claim of Rafael Larco's which the evidence quite fails to support. The scenes on the pots which Larco interpreted as evidence for writing can be adequately explained as representations of divination and gambling. Marked beans would not even make good mnemonic devices unless they were fixed in a particular order, as on a string or stick, and the Mochica beans are always represented loose. There are some other cases in which Bennett is equally incautious in his discussion of Early Man evidence in Part 1. The Lagoa Santa, Confins, and Punín finds are even less respectable archaeologically than Tepexpan Man. Incidentally, I find no reference to the Cave of Candonga, which, after Bird's finds on the Straits of Magellan, is the most likely association of human remains with Pleistocene fauna yet reported from South America (AA, Vol. 11, pp. 58-60).

Bennett feels that the Bolivian plateau on which the site of Tiahuanaco stands was probably not the center of distribution for the Tiahuanaco Horizon (pp. 184-185). His reasoning is very peculiar, however, and ignores some of the evidence. He says: "The bleak altiplano near Lake Titicaca has an altitude of almost fourteen thousand feet, which is too high for the cultivation of many plants, although quinoa, potatoes, and oca can be grown, and there is pasturage for llamas and alpacas. Today, the region supports a scattered, although reasonably large Indian population; presumably the situation was not very different in the past." The evidence presented plainly suggests the opposite conclusion to Bennett's. The Titicaca basin is excellent country for the cultivation of quinoa, potatoes and ocas, not to mention ullucu, añu (Bennett's mashua) and cañahua; these plants are Andean staples even at much lower altitudes. Even maize will grow in sheltered spots. Not only is there pasturage for llamas and alpacas, the two largest Andean domestic animals, but the region is peculiarly favorable for both animals so that they are more numerous around Lake Titicaca than anywhere else in the Andes. The lake and its tributary rivers are much better stocked with fish than most other Andean waters, and the suche or river catfish is a prominent motive in Pucará and Chucuito design. The Indian population is indeed reasonably large: it is unusually dense for the Andes and apparently was exceptionally dense at the time of the conquest also; even in the 17th century censuses the lake provinces stand out in numbers of Indian tributaries. Archaeological sites are as abundant around the lake as in many coast valleys. If the lake basin was not the center of distribution of the Tiahuanaco Horizon it was not because the area was unfavorable for human occupation.

The reader will note that I have found *Andean Culture History* an extremely stimulating book, and I venture to predict that out of the discussions it provokes will come some notable advances in the interpretation of Andean prehistory.

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Excavations at Snaketown IV - Reviews and Conclusions. HAROLD STERLING GLADWIN. Medallion Papers No. XXXVIII, Gila Pueblo, Globe, Arizona, June, 1948. 267 pp., 15 plates, 59 figures, appendix and bibliography.

Eighteen years have elapsed since Grewe Site was laid bare by the Van Bergen - Los Angeles County Museum party in the spring of 1930, and fourteen years have passed since the Gila Pueblo conducted its extensive excavations at Snaketown. No major Hohokam sites have since been excavated. Gladwin points out that prior to the intensive work done at Snaketown on the Pima Reservation, Grewe Site was the first major operation to present the early Hohokam complex to students of southwestern archaeology. Here I must confess that when we worked Grewe Site we were working in the dark and I have always been convinced that at best we only worked part of a site. The fields to the south, east and west, which had been ploughed under all bore traces of large trash mounds similar to those found on Grêwe Site, hence we always surmised that we did not excavate the entire village area. However, prior to our examination of Grewe Site, aside from the work done on the Casa Grande National Monument and some desultory digging in the ruins along the Gila River near Florence, earlier expeditions by Frank Cushing, etc., all the knowledge of the Hohokam territory had been gained by a series of surface surveys with a few test pit examinations, conducted by the Gila Pueblo over a rather wide area in the central and southwestern portions of Arizona, with particular emphasis upon the Gila and its tributaries. As a matter of fact, unless my memory plays me false, I had heard Mr. Gladwin express himself to the effect that further excavations of Hohokam sites were unnecessary since most of the valid information relative to the Hohokam had been obtained through these surface surveys.

After Grewe Site had been found, these conclusions went out the window and Gila Pueblo opened field work at Snaketown and the results were published in 1937.

Now, Mr. Gladwin, in 1948, has issued what seems to me to be a most important item, in that it is an almost complete revision of ideas voiced in the first papers on Snaketown. I, for one, am glad to see this new attitude although it seems most regrettable that it should appear when practically all work of the Gila Pueblo has been suspended.

For a number of years I have felt that the cultural elements of pottery, carved bone, stone and shell, as well as the mirror bases, copper bells, ball-courts, etc.,

embodied in Hohokam archaeology all reflected a Mexican origin. Like Gladwin, I was not prepared to put my finger upon their definite sources of origin, but by a process of elimination, neither could I assign them to any other region except the south. Perhaps it was this lack of definite source information that caused other workers in the field to look somewhat askance at the theory. Now Gladwin comes out flat footedly in favor of this theory and says:

"Ball courts, mosaic plaques or mirrors, copper-bells, tripod and tetrapod pottery, trays and well modelled figures in clay and stone, all bear the hall-mark of Mexico. Today, there are few, if any, persons who would deny the connection."

Moreover, he points out that in spite of the lack of definite evidence so far uncovered that might connect the Hohokam of Arizona with any type sites in northern Mexico, particularly Sonora, he still feels that somewhere, sometime, traces of the Hohokam migration through Mexico into the Gila Valley will be found.

Personally I believe the same thing and have always believed it. However, I differ with Gladwin in the idea that some identical types of red-on-buff pottery found on the Arizona sites will of a necessity be found on the sites further to the south. Although, as he indicates parts of Sonora have been covered I feel that to date the survey parties have been over only a fraction of the ground. Sonora is a vast land and most of the searchers have been looking for the same combination of traits as those found on Hohokam sites in Arizona.

In developing this hypothesis, Gladwin, it seems to me, has hit upon at least a partial solution of the problem of the non-existence of definite Hohokam sites in the Sonoran area immediately to the south of the present Hohokam complex in the Gila Valley. He touches upon a further development of this theory in his remarks about the unlikeliness of a sedentary group with such highly specialized traits, establishing settlements in a geographically unfavorable area. However, nowhere does Gladwin point out in this connection that there may have been hostile semi-nomadic tribes inhabiting the terrain between the original homelands of the Hohokam groups and their ultimate destination, the fertile valley of the Gila. To me it seems this living barrier would prove as formidable as the land itself, perhaps even more so since hostile fighters would not encourage settlements within their territories.

Gladwin also indicates, and rightly so, the lack of any definite impressions of Mogollon culture over an extended period of time, upon the more highly developed Hohokam culture, thus strengthening his argument for the introduction of an already well established and complex culture strong enough to withstand intrusive influences from the north.

However, in his summing up of the traits which set the Hohokam apart from their Puebloan neighbors, certain matters of techniques, such as the paddle-and-anvil method of pottery making is overlooked. Here it seems to me is an archaeo-ethnological trait worth tracking down. Since it still persists in the old Hohokam territory and is prevalent in certain areas in Mexico, it might be worth considering in the game of running down the homeland of the Hohokam. As a matter of fact, the ethnic-historic approach to the problem has been entirely neglected by Gladwin. It must be admitted, of course, that one cannot base a complete premise of pre-historic origins and living solely upon ethnology, but, since archaeology is but dead ethnology, it seems to me, a certain correlation of facts relating to the living must be considered when summing up the factors of archaeological residue.

This criticism cannot be leveled at Gladwin alone. In this day of specialization students of archaeology look down their noses at the ethnologists, and vice versa. Yet, in spite of these antipathies, the historic approach to an understanding of problems cannot be denied. It is true that a certain amount of "historical background" is given in connection with some archaeological problems but in general it is considered a necessary nuisance at best. It must be remembered that there have been four centuries of historic contact between the European and native American cultures. Within this period certain phases of native life have either died out or have changed radically under the impact. On the other hand tenuous threads of aboriginal thinking and doing run like vivid trails through the mixed warp and woof of the double faced fabric of the two cultures, and some of these threads, if followed to the end, may serve to give a better understanding of the cultural mantle as a whole.

In general I believe that Gladwin's revisions and corrections of his earlier theories as produced in "Snaketown IV" will have a salutary effect upon the students of Southwestern archaeology. However farfetched some of his alleged tongue-in-the-cheek incantations may have sounded to some of us who are familiar with his earlier (and some of his more recent publications) I feel certain that this last opus on Snaketown will strike a more receptive chord. There will be those, of course, who will differ with him (and the present reviewer). Gladwin has, I think, presented an honest and frank recantation which is decidedly refreshing. In his own words he has "cleaned the slate" and by so doing he has paved the way for a better understanding of all future work to be done in the Hohokam area, as well as other archaeological areas in the United States and Mexico and I echo his words in regard to all our future professional research work . . . "it is of the utmost importance that those of us who are familiar with its problems should take all possible steps to reconstruct its history as accurately as we can."

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The Florida Indian and His Neighbors. JOHN W. GRIFFIN, Editor. Rollins College, Winter Park, Florida, 1949. 168 pp. $1.50.

In this small volume are published in full the papers read at a conference of the same name held at Rollins College, Florida, under the sponsorship of the inter-American center of Rollins College.

Six papers are included, as listed below, plus an introduction by Carl E. Guthe and a summary by Gordon R. Willey.

Cultural Traditions in Florida Prehistory — John M. Goggin

The Historic Archaeology of Florida — John W. Griffin

A General Survey of Southeastern Prehistory — Charles H. Fairbanks

Meso-America and the Southeast: A Commentary — James B. Griffin.

The Southeastern United States and South America: A Comparative Statement — Gordon R. Willey

The Southeast and the West Indies — Irving Rouse

As is apparent from the titles, the papers are tailored to fit into a composite picture of Florida archaeology as it stands today. The Florida cultures and their development through time and space are dealt with by Goggin and John Griffin, while Fairbanks relates them to the Southeastern culture area as a whole. James B. Griffin, Willey, and Rouse consider possibilities of relationship with areas outside the United States.

This well organized collection representing interrelated approaches to a common set of problems is certainly a major contribution to the archaeology of Southeastern United States, and there is little doubt that it will serve as a standard source for some time. It may be hoped that it will also serve as the inspiration for similarly well integrated attacks on the problems of other archaeological areas of Eastern United States, research in many of which obviously needs reorganization and a few new thoughts.

On the whole, the problems handled by the various individual authors are apparent from the titles, and on the whole they are very well done, clearly written and well organized. Some comment on the individual papers may be in order however.

Goggin deals with the archaeology of the entire state in terms of seven cultural traditions, the Paleo-Indian, Archaic, St. Johns, Glades, Malabar, Gulf and Alachua. A cultural tradition is defined as ". . . a distinctive way of life, reflected in various aspects of the culture, perhaps extending through some period of time and exhibiting normal internal cultural changes, but nevertheless throughout this period showing a basic consistent unity." Under each tradition, data is considered in terms of four categories which are definition, distribution, environmental relations and history. Since its scope is so tremendous, the paper is of course largely a summary as are the others in this volume. This paper does suffer unduly however from inadequate documentation and/or incomplete explanation at times, and this precisely at those points where new material is introduced. A few examples may be pointed out, e.g., "The Lauderdale focus is another cultural unit with pottery designs similar to the Orange Incised pottery of Florida" (p. 24). If by the Lauderdale focus pottery is meant the fiber tempered pottery of the Wheeler series, this design similarity is not apparent to the reviewer. If the similarity is there, more complete explanation is needed to prevent other unwary souls from missing it. A point which needs some sort of documentation, even in the form of a reference to an illustration in one of C. B. Moores works, a collection, or a manuscript, is the statement on p. 27 that "St Johns IIb contains Middle Mississippi influence in the form of trade pottery, . . ." That such trade pottery exists surprises no one, but certainly we should know in what sites and what sort of Middle Mississippi pottery. As a last example, the inferences made as to development within the Weeden Island ceramic complex on pp. 34 and 36 are unduly bold to be presented flatly, without supporting evidence. They are not completely in line with any previous published statements by Willey or Goggin.

John Griffin's contribution is an adequate summary of the available data on the proto-historic and historic cultures of Florida. Much of the work on them has been done by the Florida Park Service under his direction.

The "General Survey of Southeastern Pre-history" by Fairbanks is one of the most detailed and useful summaries made available to date. There are a few points which may be criticized, although they are minor. On p. 66 there is some confusion, justifiably, as to the relationships between Santa Rosa - Swift Creek and Weeden Island. As worded here, Crystal River is both Santa Rosa-Swift Creek and Weeden Island, apparently in the same time period. In the succeeding paragraph it is stated that Weeden Island is to be placed in Middle Woodland. This may be the result of confusion between Middle Woodland as a time period and Middle Woodland as a culture complex, but time period is implied here, which cannot be an appropriate placement for late Weeden Island. On p. 68 it may be pointed out that the suggested earlier date for Hamilton, Copena, and Swift Creek leaves a wide gap between these and the early Mississippian cultures in their respective areas, such as Macon Plateau.

Griffin starts his paper with the assumption that "prehistoric cultural connections or contacts of one kind or another have taken place between what is now Mexican territory and the Southeastern United States." A considerable amount of relevant evidence is then discussed, although it should be pointed out that many, if not most of the items are in the form of hypotheses or possibilities rather than concrete and completely pertinent facts. As is usual in Griffin's papers, many lines of inquiry into quite clearly formulated problems are indicated.

South American - Southeastern cultural parallelisms in terms of the culture type concepts now used in South and Meso-American studies are discussed by Willey, the types being Marginal, Tropical Forest, Circum Caribbean, and Andean. Similarities in stage of development between the Southeastern Archaic and the Formative, Burial Mound or Woodland and the Tropical Forest, and Temple Mound or Mississippian and Circum Caribbean are pointed out. Actual interrelationship rather than developmental parallelism is postulated for the Circum - Caribbean - Middle Mississippi duo, although the possibility of some diffusion for the earlier southeastern stages is admitted.

Rouse summarizes the available data on Florida-West Indian contacts, bringing the problem completely up to date. The theory of Ciboney-Florida Archaic interrelationship is emphasized, and it is pointed out that the most probable movement is from Florida into the West Indies. A relationship between the sub-Taino culture of Cuba and the Glades area of Florida is also hypothesized on the basis of ceramics. In view of the basic uniformity but specific differences, Rouse postulates a common origin at the Ciboney-Archaic level.

The conference summary by Willey not only summarizes the data presented in the individual papers but is synthetic to a degree, adding further interpretation on the over-all level. The volume would lose much without it.

The terminology used by Willey in some spots is indicative of the confusion in terminology which has been reached in the Southeast of late. In one paragraph on p. 150 we find all of the following terms indicative of time period, culture horizon, or both: Early Mississippian and Temple Mound Stages; Early Mississippian horizon; Burial Mound; Woodland; Burial Mound type culture; Regional Woodland; Burial Mound II; Marksville, Late Hopewellian, and "Troyville, a time zone. . . ."

The confusion arising from this assortment of overlapping terminologies and concepts is definitely not solely attributable to Willey, although he has played his part, but is rather a reflection of the current state of affairs in the Southeast. A newcomer to the literature of the area spends more time trying to decide whether people are talking about the same thing than he does on their subject matter, and then he must try to decide whether they are discussing ceramic types, ceramic complexes, cultures, time periods, culture stages, or whether they actually have them as mixed up as he feels he does.

After reading this same paragraph of Willey's there will still be many who remain unconvinced that there are platform mounds associated with Troyville or that the few Marksville-Troyville sherds found in the Davis site really indicate a necessity for major revisions in the current concepts of chronological equivalents in the Southeastern United States.

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Popol Vuh, the sacred book of the ancient Quiche Maya. English version by DELIA GOETZ and SYLVANUS G. MORLEY from the Spanish translation by ADRIAN RECINOS. Norman: University of Oklahoma Press, 1950. xix and 267 pages, 4 figures. $3.75.

The Popol Vuh is of first importance to anthropologists because of the wealth of ethnological material it contains. The original was written in Quiche-Maya, but using European script, probably about the middle of the sixteenth century; it was transcribed and first translated by the Dominican friar, Francisco Ximenez, shortly after A. D. 1700. There have been various editions in the last ninety years, of which the Brasseur de Bourbourg translation is the best known but not the most accurate.

The present translation is from the pen of Adrian Recinos, Guatemala's outstanding man of letters who was for many years Guatemalan ambassador in Washington. It is preceded by a scholarly introduction of seventy-two pages by Recinos which covers the field of native writing in general and of the Popol Vuh in particular, a discussion of possible authorship (the work is anonymous), a life and a full discussion of the writings of Friar Ximenez, in which the confusion which surrounded the various versions of his sundry manuscripts is finally dispelled in a most lucid and painstaking manner. This is followed by an appraisal of the various translations of the Popol Vuh, in which the reviewer, as an old admirer of Ximenez, was delighted to see the good Dominican restored to the pre-eminent position he so richly deserves. This long introduction, which concludes with a brief summary of Quiche history, is a deeply interesting essay which throughout bears testimony to the author's erudite familiarity with the complex literary vicissitudes and background of the Popol Vuh, and, indeed, of all sources, published and manuscript, which bear on the pre-colonial and colonial history and literature of the Guatemalan highlands.

The reviewer, if one may paraphrase a famed remark, having little Maya and less Quiche, is not competent to judge the merits of this translation, but he has the impression that it is a careful piece of work and surely superior to any of its predecessors. In a number of places it makes better sense and is more in conformity with native ways of thought than any former version. The task of translating the Quiche version can not be easy, for the Ximenez Quiche text lacks glottal stops and aspirates, the absence of which must confuse any translator and multiply alternate versions of difficult passages. Furthermore, many ritualistic expressions obscure the meaning. Recinos' many footnotes clarify many of the linguistic problems and in other respects add materially to the value of the book. The translation into English is well done. No library covering Americana should be without a copy of this edition of the Popol Vuh.

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Cambridge 38, Massachusetts

ANNUAL MEETING OF THE SOCIETY FOR AMERICAN ARCHAEOLOGY, 1950

The fifteenth annual meeting of the Society for American Archaeology was held on Friday and Saturday, May 19 and 20, 1950, in the University of Oklahoma Extension Study Center at Norman, Oklahoma. This meeting took place in conjunction with the twenty-sixth annual meeting of the Central States Branch of the American Anthropological Association. Over 100 persons attended these joint meetings.

MEETING OF THE EXECUTIVE COMMITTEE

As required by the constitution of the Society, a meeting of the Executive Committee was held preceding the regular business meeting of the Society. This meeting of the Executive Committee is included in the report of the Secretary.

ANNUAL BUSINESS MEETING

The annual business meeting of the Society was called to order by President J. O. Brew at 11:00 a.m. on Saturday, May 20, 1950. About 40 members were present.

The minutes of the fourteenth annual meeting were not read, but were approved as published in *American Antiquity*, Vol. XV, No. 2 (October, 1949).

The report of the Secretary was read and accepted (see below, p. 177 for this report).

The report of the Treasurer was read and accepted (see below, p. 178 for this report).

The report of the Auditing Committee was read and accepted (see below, p. 179 for this report).

The report of the Editor was read and accepted (see below, p. 180 for this report). At the completion of the reading of his report, the retiring Editor, Dr. Irving Rouse was given a rising vote of thanks in appreciation of his work as editor of *American Antiquity*.

The report of the Elections Committee was read by the chairman, George I. Quimby, and accepted. The results of the balloting by mail (264 ballots received) for new officers was as follows:

President	Frank H. H. Roberts, Jr.
First Vice President	H. M. Wormington
Second Vice President	Donald Collier
Editor	Jesse D. Jennings

Members of the Executive Committee:

James B. Griffin (to 1952)
Alex D. Krieger (to 1952)

The report of the Committee on the Spelling of "Archaeology" was read by the President and accepted. The Committee recommended that archaeology be spelled "archaeology"[1] instead of "archeology."

The report of the Committee to Explore the Criteria of Viking Fund Award Selection was read by the chairman, Frederick Johnson, and accepted. The following is the summary of the concensus of the Committee:

> This Committee is unanimous in its belief that the Viking Award Committee should have complete freedom in choosing a candidate and that they should govern themselves by contemporary conditions and considerations which will vary each time.
>
> It is hoped that now and in the future no restrictions will be placed on the Award Committee and that at no time will specific criteria be defined except at the direction of the donor.

The report of the Committee for Recovery of Archaeological Remains was presented by Frank H. H. Roberts, Jr.

On behalf of the Department of Anthropology of the University of Minnesota, Dr. Lloyd Wilford extended an invitation to the Society to hold its next annual meeting at Minneapolis. Dr. William Bascom, on behalf of Northwestern University, invited the Society to hold its next annual meeting at Evanston, Illinois. Both invitations were referred to the Executive Committee for decision as to place and time of meeting.

The following resolutions were presented by the Committee on Resolutions (Clarence H. Webb, Chairman).

> *Resolved*: that the Society for American Archaeology assembled in its annual meeting at Norman, Oklahoma, May 19 and 20, 1950, hereby express its thanks and appreciation to Dr. Robert Bell and the members of his department and committee who arranged the program and supervised the details of the meeting; to the faculty of the University of Oklahoma and particularly its Extension Center for its hospitality; to Dr. J. Willis Stovall, Director of the University of Oklahoma Museum and his museum staff; and to Dr. Karl Schmitt and the Caddo Indians who provided such excellent and appropriate entertainment.

> *Resolved*: that the Society for American Archaeology note with regret the death during the past year of the following members and life members: Dr. C. C. Harrold, Dr. M. M. Yergason, Mr. C. T. Hurst, Dr. Elmer Ekblaw, Dr. John M. Cooper, Dr. Frank G. Speck, Mr. James Wadsworth, Mr. Malcom Lloyd, Jr., Dr. W. S. Park. *And be it resolved*, that the Society hereby extend condolences to the families and associates of the deceased.

The annual business meeting adjourned at 12:30 p.m.

ANNUAL DINNER

The annual dinner of the Society for American Archaeology and the Central States Branch of the American Anthropological Association was held at the University of Oklahoma Extension Study Center at 7:00 p.m. on Friday, May 19. There were songs and dances by Caddo Indians.

OTHER SESSIONS

Friday, May 19 — Morning Session, 9:00 a.m. to 11:00 a.m. Joint meeting — Central States Branch American Anthropological Association and Society for American Archaeology. F. H. H. Roberts, presiding.

1. "Stratigraphic Tests at Emerald Mound, near Selzertown, Mississippi." JOHN L. COTTER, Natchez Trace Parkway, Tupelo, Miss.

2. "The Kansas Monument Site." CARLYLE S. SMITH, University of Kansas.

3. "The Petroglyphs of Wyoming: An Archaeological Problem." DAVID S. GEBHARD, University of Minnesota.

4. "A Preliminary Report on the Diamond Bluff Site." MOREAU S. MAXWELL, Beloit College.

5. "The Relationship Between the Shell Heap People of Kentucky and Eastern Brazil." GEORG K. NEUMANN, Indiana University.

Afternoon Session, 2:00 p.m. to 5:00 p.m. Society for American Archaeology. J. O. Brew, presiding.

1. "A Peruvian Ikat from Pachacamac." INA VAN STAN, Florida State University.

2. "Maya Sun Calendar Cycles." ROBERT H. MERRILL, Grand Rapids, Michigan.

3. "A Current Synthesis of New York State Prehistory," WILLIAM A. RITCHIE, New York State Science Service Museum.

4. "The Woodland Sequence in Madison, Wisconsin, Area." DAVID A. BAERREIS, University of Wisconsin.

5. "The Ozark Bluff Dwellers," LYNN HOWARD, University of Arkansas.

6. "The Abandonment of Certain Peripheral Southwestern Settlements: Nomadic Pressure *versus* Ecological Factors." J. CHARLES KELLEY, University of Texas.

Saturday, May 20 — Morning Session, 9 a.m. to 11:30 a.m. Joint Meeting — Central States Branch American Anthropological Association and the Society for American Archaeology. W. R. Bascom, presiding.

1. "Some Implications of Bride-Price in East Africa." HAROLD HICKERSON, Indiana University.

2. "Changes in the Wichita Kinship System." KARL SCHMITT, University of Oklahoma.

3. "Instrumental Analysis of Wichita." PAUL L. GARVIN, University of Oklahoma.

4. "Tortugas, An Indian Village in Southern New Mexico." WESLEY R. HURT, JR., University of South Dakota.

5. "Slavery in North Pacific Coast Societies." NANCY P. HICKERSON, Indiana University.

6. "Ponapean Categories of Property Exchange." WILLIAM R. BASCOM, Northwestern University.

Afternoon Session, 2:00 p.m. to 5:00 p.m. Joint Meeting — Central States Branch American Anthropological Association and the Society for American Archaeology. George I. Quimby, presiding.

1. "Report on Viking Fund Seminar on Excavation, Preservation and Identification of Archaeological Remains." JAMES B. GRIFFIN, University of Michigan.

2. "The Present Status of Carbon 14 Research." FREDERICK JOHNSON, Phillips Academy, Andover, Mass.

3. "Geology of Some Early Man Sites in the Southern Plains." GLEN L. EVANS, Texas Memorial Museum.

4. "Implications of the Stratigraphic Sequence at the Clovis Site." E. H. SELLARDS, Texas Memorial Museum.

5. "The Post-Glacial Climatic Optimum: Its Implications in North American Chronology." ALEX KRIEGER, University of Texas.

REPORT OF THE SECRETARY

During the past year, 1949-50, the following committees and other appointments were made by President J. O. Brew and approved by the Executive Committee as required by the Constitution and By-laws of the Society.

Nominating Committee: T. D. McCown, Chairman; Erik K. Reed; and Frederick Johnson.

Elections Committee: G. I. Quimby, Chairman; Paul S. Martin; and John Rinaldo.

Viking Fund Award Committee: J. O. Brew, Chairman ex officio; Alex D. Krieger; John Rowe; Gordon Ekholm; David Baerreis; Malcolm Farmer; and Philip Phillips.

Committee to Explore Criteria of Viking Fund Award Selection: Frederick Johnson, Chairman; Irving Rouse; Emil W. Haury; Robert F. Heizer; John Champe; and George Quimby.

Auditing Committee: Paul H. Gebhard, Chairman; W. Richard Adams; and Miss Hilda Curry.

Program Committee: Robert Bell, Chairman; and Alex D. Krieger.

Local Arrangements Committee: Karl Schmitt, Chairman.

Committee on Resolutions: Clarence H. Webb, Chairman; J. Charles Kelley.

Committee to Investigate Spelling of Archaeology: J. O. Brew, Chairman ex officio; F. H. H. Roberts, Jr.; S. K. Lothrop; H. E. D. Pollock; Douglas S. Byers; Theodore McCown; John Longyear; Alden Mason; Neil Judd; George Will; W. D. Strong; W. C. McKern; William S. Webb; J. B. Birdsell; Lauriston Ward; E. B. Danson; Watson Smith; Leslie Spier; Paul S. Martin; Bertha P. Dutton; John M. Corbett; E. Mott Davis; Philip Phillips; John Champe; Loren Eiseley; Waldo Wedel; Noel Morss.

Representative to the National Council for the Preservation of Historic Sites and Buildings: Frederick Johnson.

In June, 1949, the Executive Committee voted to accept an invitation extended by the Department of Anthropology of the University of Oklahoma to hold the 1950 annual meeting of the Society at the University of Oklahoma in Norman, Oklahoma. Friday, May 19 and Saturday, May 20 were selected by the Executive Committee for the time of the annual meeting.

The Executive Committee also voted authorization for the Society to hold a special meeting for non-business purposes in conjunction with the annual meeting of the American Anthropological Association in New York City on the weekend of November 19, 1949.

On May 19, 1950 the Executive Committee accepted the report of the Elections Committee and declared the elections officially closed.

The Executive Committee authorized the storage of dead files from the treasurer's office and the secretary's office at the University of Nebraska, Lincoln, Nebraska.

The Executive Committee authorized a special meeting of the Society for American Archaeology for non-business purposes in conjunction with the annual meeting of the American Anthropological Association, December 28-30, 1950 at Berkeley, California.

The Executive Committee instructed the Treasurer and the Secretary to solicit memberships in the Society from graduate students in anthropology at American universities and from members of the various state archaeological societies.

The Executive Committee rejected a proposal for the Society to become an affiliate of the American Association for the Advancement of Science.

The Executive Committee authorized a donation of $25.00 to the National Council for the Preservation of Historic Sites and Buildings.

The Executive Committee accepted the report of the Editor and authorized the editor to solicit advertising to appear in *American Antiquity*.

The Executive Committee instructed the Secretary to protest strongly against an infringement of the Society's name by the "Society for American Archaeology" of Toronto, Ontario, Canada.

During the year those membership files in the Secretary's keeping were corrected from time to time as indicated by the Treasurer. A number of routine inquiries about the Society and membership in the Society were handled. Notices of special or annual meetings were sent to the membership and the system of balloting by mail devised and used in the 1950 annual election.

Respectfully submitted,
GEORGE I. QUIMBY, *Secretary*

REPORT OF THE TREASURER FOR THE FISCAL YEAR ENDING APRIL 30, 1950

ACCOUNT OF MEMBERSHIP

During the fiscal year May 1, 1949 through April 30, 1950 the total membership decreased from 937 to 925. The changes were as follows:

	Active	*Institutional*	*Life*
May 1, 1949	730	194	13
Plus new and reinstated	76	24	0
	806	218	13
Less deceased, dropped and resigned members	98	12	2
Totals	708	206	11

We have on our books eight complimentary and exchange members, none of whom are included in the above totals.

WORKING FUND

Receipts

Beginning balance brought forward, 5/1/49		$ 2,902.75
Income from dues and subscriptions:		
Prior years (back dues)	$ 6.00	
1949-50 (current)	5,022.00	
Prepaid (1950-51)	450.00	
		$ 5,478.00
Contributions and grants as follows:		
University of Texas, for MEMOIR No. 5	$ 2,500.00	
Viking Fund, Inc., for MEMOIR No. 5	1,200.00	
Kenneth R. Pfirman, miscellaneous	4.00	
Leslie R. Johnson, miscellaneous	4.00	
Tulane University, for MEMOIR No. 7	700.00	
University of Michigan, for MEMOIR No. 5	86.00	
Columbia University, for MEMOIR No. 6	500.00	
		$ 4,994.00
Sale of AMERICAN ANTIQUITY and MEMOIRS		666.56
Reimbursement to the Society by authors for reprint orders		570.25
Reimbursement to the Society by authors for extra illustrations		892.49
Receipts of a sundry nature:		
Sale of strip list of membership	$ 1.55	
Exchange charges on Canadian checks	.70	
From authors for excessive changes in proofs	21.64	
Overpayment of dues	1.50	
		25.39
Total Receipts		$12,626.69
Total, Balance forward and receipts		$15,529.44

Expenditures

Publishing AMERICAN ANTIQUITY and MEMOIR No. 5:		
For printing	$ 8,925.30	
For illustrations	1,278.26	
For distribution	219.57	
		$10,423.13
For reprints of articles in AMERICAN ANTIQUITY		686.93
Editorial expense		572.45
Treasurer's expense		253.42
Expenditures of a sundry nature:		
Miscellaneous printing (ballots, announcements, statements, etc.)	$ 109.97	
Refunds for overpayment of dues	7.50	
Check returned to payor for amendment	6.00	
President's office	7.25	
Secretary's office	2.50	
Contribution for support of National Council of Hist. Sites and Buildings	25.00	
One-half cost of programs for annual meeting	33.65	
Transfer to Publication Fund from Working Fund of gifts and grants not immediately needed for use	1,204.00	
		1,395.87
Total Expenditures		$13,331.80

Balance

Total, Balance forward and receipts	$ 15,529.44
Total Expenditures	13,331.80
Balance, Cash on hand, 4/30/50	$ 2,197.64

Balance, Cash on Hand, 4/30/50, broken down as follows:

General operating balance	1,225.45
Planning Committee Fund	972.19
	$ 2,197.64

BALANCE SHEET

Resources

Cash on hand in Checking Account, general operating balance		$ 1,225.45
Publication Fund, savings account		3,006.66
Accounts receivable:		
Dues	$ 18.00	
Sale of AMERICAN ANTIQUITY	38.75	
From author for extra illustrations	68.83	
From authors for reprint orders	104.38	
		229.96
Guaranteed grant to meet deficit expected in financing publication of MEMOIRS 6-7		300.00
Cash on hand in Checking Account reserved for Planning Committee		972.19
Permanent Fund Savings Account, (deposits for life memberships)		868.95
Total resources		$ 6,603.21

Liabilities and Capital

Membership dues and subscriptions, prepaid		$ 450.00
Estimated accounts payable:		
Publishing AMERICAN ANTIQUITY, Vol. XV, No. 4, Part 1	$ 1,450.00	
Publishing MEMOIRS 6-7	2,100.00	
Editorial Expense incurred in connection with Vol. XV, No. 4	20.00	
Invoices and letterheads for Treasurer's office	9.50	
		3,579.50
Restricted Capital:		
Cash on hand in Checking Account reserved for Planning Committee	$ 972.19	
Permanent Fund Savings Account, (deposits for life memberships)	868.95	
		1,841.14
Free Capital		732.57
Total Liabilities and Capital, 4/30/50		$ 6,603.21

PERMANENT FUND

Balance brought forward, 4/30/49		$ 860.33
Interest computed:		
June 30, 1949	$ 4.30	
December 31, 1949	4.32	
		8.62
Balance on hand, 4/30/50		$ 868.95

PUBLICATION FUND

Balance brought forward, 4/30/49		$ 1,784.76
Contribution, transferred from Working Fund	$ 4.00	1,788.76
Interest computed, June 30, 1949	8.92	1,797.68
Grant from Tulane University for MEMOIR No. 7, transferred from Working Fund	700.00	2,497.68
Interest computed, December 31, 1949	8.98	2,506.66
Grant from Columbia University for MEMOIR No. 6, transferred from Working Fund	500.00	3,006.66
Balance on hand, 4/30/50		$ 3,006.66

REPORT OF THE AUDITING COMMITTEE

We, the undersigned, appointed as the Auditing Committee, report that we have examined the Treasurer's accounts as submitted for the fiscal year May 1, 1949 through April 30, 1950 and find them correct and in order.

HILDA J. CURRY
WILLIAM R. ADAMS
PAUL GEBHARD, *Chairman*

BUDGET FOR 1950-51

ESTIMATE OF INCOME

Estimated beginning balance brought forward, broken down as follows:			
Balance forward, WORKING FUND	$ 775.45		
Balance forward, PLANNING COMMITTEE	972.19	$ 1,747.64	
Prepaid dues on hand:			
18 fully prepaid members at $6.00	$ 108.00		
12 fully prepaid institutions at 6.00	72.00		
90 partly prepaid institutions at 3.00	270.00	450.00	
Total estimated beginning balance brought forward			$ 2,197.64
Estimated income from dues paying members and subscribing institutions:			
From the above 90 partly prepaid institutions at $3.00	$ 270.00		
From 104 institutions at 6.00	624.00		
From 690 members at 6.00	4,140.00		5,034.00
Sale of AMERICAN ANTIQUITY			500.00
Transfer from Publication Fund to defray the expense of publishing MEMOIRS 6-7 as follows:			
Soc. for Amer. Arch. commitment	$ 600.00		
Grant from Columbia University for MEMOIR No. 6	500.00		
Grant from Tulane University for MEMOIR No. 7	700.00		1,800.00
Guaranteed grant to finance balance of cost of MEMOIRS 6-7			300.00
Estimated payments by authors of articles published in AMERICAN ANTIQUITY for excess illustrations and tables			438.49
Collection of current accounts receivable			229.96
Transfer of surplus from PERMANENT FUND			250.00
Transfer from publication fund to meet expected deficit in income			797.10
Total, estimated income			$11,547.19

ESTIMATED EXPENSE

Publishing AMERICAN ANTIQUITY, Vol. XV, No. 4, Pt. 1	$ 1,450.00	
Publishing MEMOIRS 6-7	2,100.00	
Publishing AMERICAN ANTIQUITY, Vol. XVI, Nos. 1-4	5,800.00	
		$ 9,350.00
Planning Committee Expense		972.19
Editor's Account:		
Editorial Assistant (1st quarter)	$ 50.00	
Editorial Assistant (2nd, 3rd and 4th quarters at $150.00 per quarter)	450.00	
Secretarial assistance (per year)	100.00	
Art work ($12.50 per quarter)	50.00	
Postage, telephone, express on proofs, etc.	50.00	
Transfer of Editor's office	100.00	
		800.00
Treasurer's account:		
Secretarial assistance ($15.00 per month..)	$ 180.00	
Postage and miscellaneous supplies	75.00	
Printing, stationery, invoices, etc.	25.00	
Bank and collection charges	15.00	
		295.00
Miscellaneous expense:		
President's office	$ 25.00	
Secretary's office (ballots, announcements, etc.)	45.00	
Expense of annual meeting	35.00	
Contribution to the National Council for Preservation of Historic Sites and Buildings	25.00	
		130.00
Total, estimated expense		$11,547.19

REPORT OF THE EDITOR

During the year 1949-50, the Society published Volume XV of *American Antiquity*, amounting to 363 pages, and *Memoirs* 6 and 7, a single volume of 160 pages. The total, 428 pages, is one-third less than last year, but still compares favorably with the output of other anthropological societies. It is, for example, only 10 per cent less than the amount which the American Anthropological Association published during its last fiscal year.[1]

Since this is your Editor's last report, it is appropriate to compare the size of the current volume of *American Antiquity* with that of the first volume handled by us in 1946. The 1946 volume contained 304 pages, or 21 per cent less than the current amount.

This growth in the size of the journal has been accompanied by an even greater increase in the number of contributions, so that it is now necessary for the Editor to be more selective than ever before. At the beginning of the last year, we had on hand 15 manuscripts, excluding book reviews and material for Notes and News, i.e., a backlog of about an issue and a half. Seventy-six new manuscripts were received during the course of the year, of which we accepted 35 upon submission and 21 others after revision, and rejected the remaining 20.[2] In other words, it has been necessary during the past year to reject one manuscript in four, even after revision.

By this means, it has been possible to keep the backlog for *American Antiquity* down to last year's level of an issue and a half. However, we foresee that the new Editor will have to be increasingly selective if he is to avoid enlarging this backlog.

Another problem which arose during the last year was financial. The budget for 1949-50 presupposed a deficit of $726.06, partially on account of the necessity for meeting increased costs of publication and partially because of a decrease in the Society's income. In an effort to avoid this deficit, we cut the authors' free allowance of illustrations and tables in half and instituted a charge for excess correction of proof. These measures have resulted in a saving of $959.05 over the amount budgeted for *American Antiquity* and have thereby enabled the Society to end the year without incurring the anticipated deficit in its publication program.

A third problem developed in connection with the *Memoir* series. Because of the prospect of a deficit, it was impossible to include any money in last year's budget for *Memoirs*. Nevertheless, work on the current *Memoirs* 6 and 7 had already proceeded so far that they could not easily be abandoned and the Treasurer therefore authorized their publication. It is apparent, however, that the Society cannot afford to issue additional *Memoirs* unless and until it obtains new sources of income, and all prospective authors have been so informed.

A final problem came up only three weeks ago, when the George Banta Publishing Company announced that it will not be able to handle *American Antiquity* beyond the July, 1950 issue, which it is customary for the retiring Editor to publish in the name of his successor. It has seemed to us that the new Editor should have a free hand in arranging for the printing of subsequent issues and we have therefore not attempted to obtain another printer.

In conclusion, the retiring Editor wishes to take this opportunity to express his appreciation to the Associate Editor and the Assistant Editors for their part in publishing *American Antiquity* during the past four years, and to thank the Treasurer and other participating members of the Society for their cooperation and forebearance. It has been both a privilege and an educational experience to have served as Editor of this Society, and I wish the new Editor every success in meeting the problems which face him.

Respectfully submitted,

IRVING ROUSE, *Editor*

[1] This figure is estimated in terms of words rather than printed pages, since the formats are not comparable, and without including the A.A.A. *News-Letter*.

[2] These figures do not include six manuscripts received during the past three weeks and held for consideration by the new editor.

NOTES AND NEWS

EARLY MAN

A. V. Kidder reports that Howel Williams, University of California vulcanologist, has re-examined the human footprints in an ancient mud flow near Managua, Nicaragua. From his study of volcanic deposits in the Managua Valley, Dr. Williams believes the footprints may be between 2,000 and 5,000 years old. Organic material was sought in the same stratum for Carbon 14 dating, without success.

In Guatemala, Barnum Brown has recently recovered quantities of Upper Pleistocene fossils along the Rio de la Pasion, washed from deposits farther upstream. One fragment, possibly sloth, has three sharp V-shaped cuts on the external surface, evidently made by man in living tissue. Dr. Kidder reports this as the first evidence in Guatemala of man associated with now-extinct fauna.

George F. Carter continued work at La Jolla, California, examining terraces, valley fills, and soils in relation to sea levels and human occupation. He was joined for two weeks by V. P. Sokoloff, a geochemist, who made preliminary analyses of soil samples taken in previous years and will extend the study this year. Carter suggests that Pliocene and Pleistocene soils occur in this area, and that "The Soils of the Scripps Cliff, beneath which artifacts are reported, seem to belong with these old soils. My previous guess-dates may then have erred on the conservative side." One grinding stone, one core tool, and two flakes are from formations which suggest that man lived here during a high sea stand. Carter states that "If my theory concerning the relative stability of this coast is correct, and if these are really artifacts, then this is evidence for interglacial man."

From Utah, Jesse D. Jennings reports that continued excavation in Danger Cave near Wendover is giving some tantalizing information on the relationships of Bonneville Basin cultures to others in the Great Basin, and to the geological history of the region. Ten feet of cultural debris have been found in Danger Cave; the base of the deposit rests upon deep unsorted beach gravels which fill the mouth and floor of the cave. From the very basal layer, on the beach gravels, several thin milling stones with pecked surfaces were found, savoring somewhat of the Cochise remains in southeastern Arizona.

Jennings feels that it is too early for definite statements, but the site apparently records a series of frequently recurring occupations (rather than continuous use) from a time shortly after the recession of Lake Stansbury below a level of 4,320 feet elevation until the present (Great Salt Lake now being at 4,200 feet elevation). The cave lies below the Stansbury terrace, and was probably uninhabited until the onset of the Altithermal, over 6,000 years ago.

Dr. L. S. Cressman of the University of Oregon reports that a cave, Medicine Rock Cave, along the Sprague River, showed occupation from before the eruption of Mt. Mazama to the present. The early midden material seems to correspond most closely to the Early horizon from the Lower Klamath Lake locality, the date of which is put at 7,000 to 7,500 years ago. A hurried reconnaissance along shorelines of Lake Lahontan last September turned up unmistakable artifacts, from road cuts and borrow pits in terraces.

Recent findings at promising early sites in the Rio Grande area in New Mexico are described by Frank C. Hibben. A pit just south of Albuquerque has yielded considerable Pleistocene faunal material, especially mammoth. A cultural level has been isolated 24 feet below the original surface of the gravel pit, on what was apparently a former terrace of the Rio Grande — scattered implements, crudely chipped scrapers of nondescript form plus one milling stone, and evidences of fire.

In tests in a site at Comanche Springs near Tome, there is stratigraphy reminiscent of Clovis, with apparently a similar set of Late Pleistocene conditions as the cause, Dr. Hibben reports. In connection with the blue clay layer at Comanche Springs were a number of roughly flaked quartzite objects of nondescript character. Two milling stones with one-hand manos were uncertainly associated with the early level. Faunal remains seem to be predominantly bison. A series of interesting sites has been located along the Rio Puerco west of Albuquerque, according to Dr. Hibben, including fire hearths 18 to 30 feet below the surface. Fauna are scarce; bison and mammoth occur in the same levels. Milling stones and manos have been recovered from the fire hearths. A scattering of obsidian and quartzite forms also occur. To date, no projectile points of any description have been found with the Puerco sites. These sites in the Rio Grande Valley seem to suggest some rather tantalizing Cochise parallels. The milling stones are similar to the southern Arizona material; lack of projectile points and crudity of the chipped material parallel sites further west. Professor Kirk Bryan was to examine these places late in July, before visiting Fred Wendorf's dig at the Petrified Forest. And finally, two additional Sandia points have been recovered from the Arroyo Hondo area in southeastern New Mexico. These were associated with mammoth.

In the vicinity of Denver, Colorado, Charles B. Hunt and Mrs. Alice P. Hunt have reported on the mapping of Pleistocene and Post-Pleistocene terrace deposits along the South Platte River. In a late Wisconsin gravel terrace, cut bone and a few pieces of worked stone have been found at six localities. Some artifacts are associated with camel remains, and one cut bone may be that of a mastodon. No projectile points or worked stone other than possible scrapers have been found.

E. Mott Davis of the University of Nebraska and Nebraska State Museum spent June in further work at site 25FT42 in southern Nebraska, from which he recovered a great many flint chips and defined four occupation levels. The basal half of a Plainview point was the only diagnostic artifact found.

The Texas Memorial Museum during the summer continued the excavations begun last year in the so-called Clovis site on Blackwater Draw in eastern New Mexico. Three Late Pleistocene strata, each with distinct fauna (now extinct) and distinctive artifacts have been further defined and mapped by Glen L. Evans. Many fossils have been collected, and a number of dug wells have been located and charted. These water wells, extending from the bottom of the upper bison layer down to bedrock, evidently were dug before the great mantle of sand covered the ancient lake bed in more recent millenia, that is, after the area began drying and the lake had disappeared.

During the winter of 1949-50, the Texas Memorial Museum carried on extensive excavation and collection of fossils in Friesenhahn Cave in Blanco County, central Texas. This remarkable cavern contained the remains of practically every mammal known for the Late Pleistocene except the ground-sloth. A preliminary estimate is that over 30 genera of mammals, including saber-toothed cats, have been recovered. Of several hundred flint chips a few are thought to bear chipping scars sufficiently regular to be man-made.

The University of Georgia's summer field school has again explored a quarry site at Lane Springs, A. R. Kelly writes. Collections from the site indicate a core and percussion assemblage, much cruder and more primitive than tools found in the southeastern Archaic, with a remarkable similarity to paleolithic implements of western Europe. The nearest Paleo-Indian comparison in Georgia would be with the Macon Plateau flint industry, but Lane Springs is cruder and has less secondary (pressure) flaking, with fewer projectile points.

THE ARCTIC

The field season of 1950 saw a concerted attack on various anthropological problems in Alaska, with greatest emphasis on archaeology, Dr. Giddings writes from Elim, on Darby Peninsula, where he and Froelich Rainey, with two University of Pennsylvania students, are surveying archaeological sites of the Bering Sea coast by boat.

A party led by Helge Larsen, including Mrs. Larsen and their son Ole, Jörgen Melgard of the Danish National Museum, and others, left Fairbanks early in June, to attack a Deering Ipiutak site and the Trail Creek caves.

Wendell Oswalt and Walter Arron and their wives left Fairbanks in June to traverse the Yukon River and make a linguistic and archaeological survey of the Bering Sea coast between the mouth of the Yukon and Hazen Bay.

William Laughlin, accompanied by James Lench, from the University of Oregon, is continuing his archaeological studies in the Aleutians, on Adak and other islands, combined with studies in the physical anthropology of the Aleut. Associated with Dr. Laughlin are Dr. Knut Bergsland, from Denmark, and Dr. John Marsh, carrying on linguistic studies.

Study of Tlingit cultural history was resumed b Frederica de Laguna and her assistants.

A newspaper release has been noted to the effect tha a University of Michigan expedition headed by Theo dore P. Bank is to use a Geiger counter on early ma in Alaska for C^{14} dating.

PACIFIC COAST AND BASIN-PLATEAU

Charles E. Borden, of the University of British Columbia, assisted by two University of Washington students, has completed supplementary investigations a the Point Roberts, Washington, site. Dr. Borden's *Preliminary Report on Archaeological Investigations in the Fraser Delta Region*, embodying detailed information from the excavation of five sites, will be published in the near future by the Provincial Museum, Victoria, B.C.

Adan E. Treganza, of San Francisco State College, is conducting the Summer Field Session in Archaeology at the University of Washington. The group is excavating a village site at the northern end of San Juan Island.

William Massey, of the University of Washington, is excavating a portion of the Old Man House site of Chief Seattle at Suquamish, Washington.

The River Basin Surveys (Smithsonian Institution) Columbia Basin project has four excavation parties working this summer in reservoir areas in Washington, under the direction of Douglas Osborne. George Cheney, with a party of six University of Washington men, is excavating in Chief Joseph Reservoir, just downstream from Grand Coulee Dam. By late July this crew had excavated two house-pit sites and tested others. S. Tobin, also a University of Washington graduate student, is heading a similar party in Equalizing Reservoir within the Grand Coulee itself. Here sites are few, but deposits in a shallow cave may offer a valuable range of culture, and one house-pit site is to be tested. R. Daugherty, of Washington State College, has the third party at Moses Lake, in Potholes Reservoir, working on house-pit sites with meager middens. The largest crew is operating in McNary Reservoir, near Umatilla, Oregon, under Osborne's immediate direction, with John E. Mills as assistant.

In addition, two River Basin field survey parties are operating in the Northwest, under the direction of J. Shiner, field director stationed at Eugene, Oregon. G. Coale and O. Romano are working in the northern Idaho-Montana area, and S. Peck and C. Farrell in Oregon and Washington. The latter party has completed the work in the John Day Reservoir below McNary, locating a large number of important sites there.

At the University of Oregon, L. S. Cressman, head of the Department of Anthropology, is on leave (1949-50) preparing materials for a monograph on Klamath Indian prehistory, based on two summers' field work in pit-houses along the Williamson and Sprague Rivers and one season's work in a large midden, into which house pits were dug, at Kawumkan Springs. The area of Klamath Lake provides an environment that ha

changed very little since the Pleistocene, because of the availability of fresh water, and hence offers — in contrast to the Great Basin proper, with its post-Pleistocene climatic fluctuations — the possibility of a continuum of culture from the earliest occupation to the historic village sites. In general, changes took place slowly, and the technology shows a striking conservatism over a very long period, in a relatively static environment and an area off main lines of travel and diffusion.

In Medicine Rock Cave, near the Sprague River, early occupation, antedating the eruption of Mt. Mazama, seems to correspond to the Early horizon of the Lower Klamath Lake locality, which is dated at 7000 to 7500 years ago. The American Philosophical Society will publish in the forthcoming *Proceedings* the report on the Butte Creek Cave and other work in the John Day Region of North Central Oregon, which discusses material showing probably three different cultures impinging upon that area.

PLAINS

The 1950 field season in the Plains marks the beginning of large-scale archaeological excavations at sites found by the River Basin Surveys during the past few years. Not only Smithsonian Institution field parties, but also many from state institutions, operating under cooperative agreements with the National Park Service, have been active from Texas to North Dakota and from the eastern slopes of the Rockies to the eastern margin of the Plains. The sites have been selected on the basis of imminence of destruction concomitant with the construction of reservoirs and because of their relative importance archaeologically within the areas to be flooded.

To the southward, the Eufaula and Optima Reservoir areas in Oklahoma were surveyed, while Dr. Robert E. Bell took the University of Oklahoma field school back to the Fort Gibson Reservoir for a second season on the Harlan site, related to the Spiro focus, excavating, in addition to house remains, a mound containing a square-walled rock structure. In Texas, Robert L. Stephenson of the River Basin Surveys (Smithsonian Institution) has completed scheduled excavations in the Whitney Reservoir, on the Brazos River near Hillsboro, and the Lavon Reservoir, on the East Fork of the Trinity not far from Dallas. A variety of sites, from rock-shelters to historic remains, were investigated in the Whitney area; of special interest at Lavon are the peculiar and unexplained large pits. Investigations by the University of Texas, under cooperative agreement with the National Park Service, in the Falcon Reservoir area on the lower Rio Grande were carried forward by Jack Hughes and Alex Krieger, finding a wide range of archaeological and historical material.

Richard Wheeler started the season for the Smithsonian Institution in the Northern Plains by returning to the Angostura Reservoir in South Dakota, where he found some of the sites already under the rising lake water. One ceramic site, 39FA83, which bears some relationship to the Dismal River aspect, was excavated. Work was also carried on at another ceramic site and one lithic one. In July, Wheeler shifted operations to the Boysen Reservoir in Wyoming.

Ellis Burcaw carried on excavations at Rock Village (32ME15) in North Dakota, the northernmost fortified village on record. Features excavated include houses and small pits. Donald J. Lehmer initiated the work in the Oahe Reservoir in South Dakota by excavating site 39ST30, a stratified site which revealed round houses over rectangular houses. Walter D. Enger, Jr. carried on survey work in the Tiber Reservoir in Montana where several sites worthy of excavation have been found. Robert L. Shalkop also did survey work in Montana and Wyoming. Thomas Garth led a unit in the Fort Randall Reservoir, South Dakota, where he concerned himself principally with historic sites such as Fort Randall, an old U. S. Army post.

Working under cooperative agreement with the National Park Service, Carlyle S. Smith of the University of Kansas excavated portions of the Talking Crow site (39BF3), a fortified earth-lodge village on Campbell Creek in the Fort Randall Reservoir, South Dakota, finding at least three cultures represented. One resembles Upper Republican, another Protohistoric Arikara, and a third is attributed to the Dakota of the 19th century.

In Nebraska, John L. Champe of the University of Nebraska returned to the Harlan County Reservoir where he resumed the excavation of White Cat Village for the third season and also worked in sites attributable, respectively, to Upper Republican and the as yet to be defined "Glen Elder" focus. Marvin Kivett of the Nebraska State Historical Society excavated some small Woodland sites in the Swanson Lake Reservoir in Nebraska.

Wesley Hurt of the University of South Dakota excavated part of the Swanson site (39BR16), a fortified earth-lodge village on Brule Flats in the Fort Randall Reservoir, South Dakota. Rectangular pit houses with floors buried under four to five feet of overburden were excavated. At least three ceramic traditions are present: one related to Upper Republican, one similar to that found at the Mitchell site farther East, and a third which resembles Middle Mandan.

Carling Malouf of the University of Montana found a number of small sites, largely marked by tipi rings, in the Canyon Ferry Reservoir in Montana. William Mulloy of the University of Wyoming carried out survey work and excavations in Wyoming.

Glenn Kleinsasser* led a party for the North Dakota State Historical Society in the Garrison Reservoir in North Dakota where he excavated several features at the site of Fort Berthold where the Arikara, Hidatsa, and Mandan lived simultaneously in an earth-lodge village containing 175 houses. The principal operation involved the digging of a ceremonial lodge 80 feet in diameter.

Chris Vickers reports that the Manitoba Historical Society devoted May and June to a survey of portions of southwestern Manitoba. A bundle burial of the ceramic period was found at the Lockport site north of Winnipeg. On the Assiniboine River excavations were conducted at the Snart site, a village which probably was occupied by the Assiniboine between 1768 and 1794. During the autumn a survey of the Winnipeg River between Pine Falls and Fort Alexander, in cooperation with Richard MacNeish of the National Museum, Ottawa, is proposed, primarily to locate documented Cree sites.

NORTHERN MISSISSIPPI AREA

Iowa. During May and June excavations were conducted by Paul L. Beaubien of the National Park Service at the recently established Effigy Mounds National Monument on the Mississippi River north of Marquette, Iowa. The initial excavations were to determine whether any variation existed between the Iowa mounds and the Effigy Mound Aspect of Wisconsin. The mounds located on the top of the bluff, like many of the mounds with a similar placement in Iowa and Minnesota, proved to be barren of artifacts, and the complete decomposition of bones made the location of burials impossible. One of the two conical mounds tested in the valley of the Yellow River, however, contained partially cremated skeletal material, and a little other material. The monument would appear to contain Hopewellian components as well as Effigy Mound.

Missouri. The excavation program of the University of Missouri field session, under the direction of Carl H. Chapman, includes work at a variety of sites. It is to begin at Graham Cave, Mineola, Missouri, then to include excavations within the Pomme de Terre Reservoir area and the Kasinger Bluff Reservoir area and finally at the Missouri Indian site near Marshall, Missouri.

Wisconsin. The current work of the Wisconsin Archaeological Survey is primarily focused upon the site of Aztalan and represents a continuation of excavations begun in the 1949 season, when two houses were excavated and new data added on stockade features and burials. The stimulus for this work is the purchase of the site by the State and the financial support of the State Conservation Commission which looks forward to the eventual reconstruction of the site. Consequently there is need of a complete picture of the village. Survey members who participated in the 1949 excavations include David A. Baerreis, Moreau Maxwell, and Robert Ritzenthaler with Chandler Rowe in charge. Rowe and Maxwell, with the latter in charge, are conducting the 1950 excavations.

In part, the 1950 season represents a continuation of the study of structural aspects of the site isolated during the first season's work. Further work on the stockade adjacent to the river indicates that this also had towers or bastions. In addition a second stockade, indicated by a wall trench, with occasional post molds, which runs parallel to and 160 feet west of Crawfish River, has been located in the area of greatest village concentration. It would appear to be an old stockade of the village, since a number of cache pits and one rectangular structure cut through the wall trench. What appear to be towers, similar to those noted for the larger stockades, have also been located. A rectangular structure cuts through and is later than this stockade. The contents of 34 new cache or refuse pits add to but do not change the material culture as indicated by the previous season. Important additions are celts with an oval cross section and tapered poll, squared at the butt end. Six awls manufactured from deer scapulae and having a perforation in the corner of the handle were discovered. This type was previously listed as of rare occurrence. Another skeleton of a dog in a deep refuse pit tends to confirm the find of the previous season. A much higher incidence of human skeletal fragments, apparently included in refuse pits in the same manner as fragments of animal carcasses, has been noted. One fragment of human mandible was both burned and cracked. Both the high incidence and the appearance of the bones seem to indicate that human flesh was esteemed second only to deer meat.

The work of the Survey has also included less extensive work on sites in the vicinity of Appleton, Beloit, and Madison as well as the testing of the Point Sauble site near Green Bay, which is adding to our knowledge both of late Woodland ceramics and of the Upper Mississippi complex.

Illinois. The University of Michigan Museum of Anthropology is beginning a five year survey and excavation program in the central Mississippi Valley on both sides of the river from approximately the mouth of the Ohio River to the mouth of the Illinois. The major aim of this project is to obtain a continuous sequence of Indian occupation, from the elephant to the explorers from across the sea. Headquarters for the party is at the Jefferson National Expansion Memorial, recently dedicated by President Truman. The use of the building is through the courtesy of the National Park Service and the program is supported by a generous grant from the Viking Fund. The first summer's excavation will be concentrated in the Cahokia area and will be combined with extensive use of private collections. The bulk of the collection made by the survey will go to local institutions. James B. Griffin and Albert C. Spaulding are co-directors of the work.

A field party from the University of Illinois, under the direction of John C. McGregor, is working in the lower part of the Illinois River Valley. The first month of the field period was spent at the Pool site, north of Chambersburg on the west side of the river, excavating a circular house almost forty feet in diameter. A second objective is an attempt to determine ceramic sequences at the Pool site and to survey other sites in an effort to

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* Regretfully we add the news, just received, that Mr. Kleinsasser was seriously injured in an automobile accident July 30, 1950. — *Editor.*

place the various Illinois Hopewell villages in a time sequence. In one area of the Pool site approximately six to seven feet of stratified trash has been excavated. Survey work has been undertaken in cooperation with W. L. Wadlow and has proven very fruitful.

Two sites are to be excavated by the Illinois State Museum with the cooperation of the University of Chicago and Southern Illinois University, with Georg K. Neumann of Indiana University as Field Director. One is a Hopewellian site near Rising Sun on the Wabash River in White County, Illinois, which consists of several burial mounds, a ridge cemetery, and a village site. The second site is the Kaskaskia village in Randolph County, Illinois which was occupied from around 1700 to 1832. It is expected that information on both the aboriginal culture and culture change among the Kaskaskia will be obtained.

J. Charles Kelley joined the staff at Southern Illinois University on June 12, 1950, as Director of the Museum and Professor of Anthropology. The new anthropological program calls for the expansion and remodeling of the museum, which was originally installed by Cyrus Thomas, the inauguration of a research program in both archaeology and applied social anthropology, and the development of a Department of Anthropology. For the first two years Anthropology will be attached to the Department of Sociology for administration.

Indiana. The Indiana Historical Society, in cooperation with the Department of Anthropology, Indiana University and the Indiana Department of Conservation, is again sponsoring an archaeological field school under the direction of Glenn A. Black at the Angel Mounds site located near Newburgh, Indiana. The Indiana Historical Bureau is conducting archaeological surveys of Gibson and Warrick Counties during the summer.

Ohio. The archaeological research program of the Ohio State Museum for the summer is to be an extremely active one.

Field work began in May when a series of trenches were dug at the historic site of Schoenbrunn Village (1772-77), near New Philadelphia, Ohio. This preliminary exploration, carried on in cooperation with the research staff of the Museum, confirmed the opinion that the present restoration is on the original site. It also revealed one example of a central fireplace in the houses of the convert Indians, a refuse pit, and part of a fence pattern of the village. Previous excavations and double depth plowing in the past have destroyed many important structural details which otherwise would have come to light.

From June 19 to July 14, excavations were conducted on an Archaic site, located five miles north of Oxford, Ohio. Excavation revealed a series of trough-like refuse pits and a post-mold pattern. One dog burial was found beneath midden material. Artifacts consisted mainly of heavy stemmed projectile points, scrapers, bone awls, and needles. Excavation was under the general direction of Raymond S. Baby, Curator of Archaeology, and supervised by William H. Sassaman of the Department of Anatomy, Western Reserve University and Robert Goslin, Assistant in Archaeology. Student help was obtained from near-by Miami University.

Another archaeological excavation planned for the summer is to be an investigation of the grounds at Adena, the home of former Gov. Worthington and site of the original Adena Mound. The work, part of which has been completed, will include the location of outbuildings, walls, steps, walks, and porches.

SOUTHEAST

The only active River Basin (Smithsonian Institution) field work being done in the Southeast in mid-summer was that by Carl F. Miller at the Buggs Island Reservoir, on the Roanoke River, in southern Virginia, during July, excavating a late pre-European burial ground which produces considerable interesting material. Miller has found a certain amount of stratigraphy and the grave offerings appear to fall into four different components. Miller probably will return later to the Buggs Island Reservoir to excavate in the two eastern "Folsom" sites which he found there during the course of his survey.

Ralph S. Solecki expects to get started on a survey in the area of the Morgantown Lock project, in West Virginia, during the summer and after that is completed will probably transfer his activities to several proposed reservoirs in Pennsylvania.

Kentucky. At present the Department of Anthropology of the University of Kentucky has under excavation in Mason County, Kentucky, on the bank of the Ohio River, a large earth mound of the Adena peoples. W. S. Webb plans to continue this excavation to about September 20 at which time the work will be put in winter order, and be completed next year.

Tennessee. No field work of any importance has been carried on in the Tennessee area since 1942 due to lack of funds, T. M. N. Lewis reports, adding that the dam-building program continues to inundate many important sites in parts of the state which have never been scientifically investigated. The greatest destruction has occurred in the central part of the state where the Corps of Engineers has been constructing additional dams.

Georgia. This summer the field school of the University of Georgia, directed by A. R. Kelly, returned to southwest Georgia, with headquarters at Bainbridge, to continue work of survey and salvage in the basin of the lower Flint and Chattahoochee. To date the students have worked on a historic late 18th century site on the Flint near Bainbridge, the paleo-Indian site of Lane Springs on the upper Spring Creek, and at Kolomoki Mounds State Park, where William H. Sears is directing explorations on a burial mound site and is supervising field exhibit and park museum installations at the park.

Antonio J. Waring, research associate in the department, assisted by Lewis Larson, Jr., has just completed a test excavation on a huge circular shell ring on Sapelo Island, Georgia, and are now working on a shell mound near Savannah, of the same period and likewise yielding

Poverty Point objects. Both sites are fiber-tempered pottery horizons from top to bottom and are yielding very significant data tying in with previous material secured by Waring on the coast. A cut into the wall of great shell ring on Sapelo Island (the ring which Moore figures) reveals that the top two feet contain ornamented fiber-tempered pottery, the bottom eight feet plain fiber-tempered pottery. Artifacts include simple and engraved bone pins, a very nice banner stone, socketed antler projectile points, and Poverty Point clay objects. The shell ring appears to be a big "ceremonial" enclosure — Adena style — as a late Archaic trait.

During the spring, Dr. Kelly began a survey of the two stone effigy eagle mounds located near Eatonton, Georgia. He is mapping the sites, with only test excavations. Although these striking effigy mounds were described by C. C. Jones 75 years ago, no definitive archaeology has determined their cultural position since then. Work will be renewed in the fall.

A new quarterly magazine, *Early Georgia*, was initiated with the Spring issue as the official organ of the recently organized Society for the Preservation of Early Georgia History.

Joe Caldwell of the River Basin Surveys (Smithsonian Institution) has been working up material from the Allatoona Reservoir in Georgia, and is to survey the Buford Project on the Chattahoochee River and other proposed reservoirs in Georgia.

Florida. Recent archaeological work by the Florida Park Service has been concerned with both aboriginal and European sites. Ripley P. Bullen conducted excavations on and around Madira Bickel Mound State Monument on Terra Ceia Island and found the site had been occupied in the Perico Island, Weeden Island and Safety Harbor Periods. Over 11,000 sherds found at the site provide an adequate sample for analysis. Test excavations were also undertaken at Perico Island, and at the Whittaker Site in Sarasota. John W. Griffin briefly examined the site of Ft. Gadsden, built in 1818, in the Apalachicola National Forest. This site also contains the remains of an earlier British post established during the War of 1812, on which Indian pottery was found. Field work among early nineteenth century plantations in Volusia County was undertaken by Griffin, and excavations were made at five sites. Besides recovering much European material of this period it was established that two so-called late seventeenth century Spanish missions were in reality early nineteenth century sugar mills.

Summer plans of the Florida Park Service call for an archaeological survey of Amelia Island in extreme northeastern Florida. The Park Service owns the plaza lot of nineteenth century Fernandina, which rests atop a shell midden, and it is hoped that at this site and others the archaeological sequence of the island can be ascertained. The location is important because of its proximity to coastal Georgia and the northeast Florida coast, which areas have a rather divergent archaeological history.

No new major projects were initiated during the spring by the University of Florida, but work continued with voluntary student labor at Fig Springs and Spaldings Lower Store. Fig Springs is a rich refuse site of the Spanish period, possibly early seventeenth century. Thousands of potsherds, including restorable vessels (both Spanish and Indian) are the main material found, but minor flint, shell, glass, and metal remains are present.

Spaldings Lower Store, a late eighteenth century (circa 1763-1783) trading post for the Seminoles has yielded a rich store of European remains as well as some probable Seminole material. In some parts of the site a sequence running from late Archaic (fiber-tempered pottery) into historic times has been obtained.

Minor projects include test excavations in the Glades Area on Fish-eating Creek in the northern Everglades and on Onion Key in Lostman's River, Everglades National Park. These tests yielded abundant stratigraphic data.

During the early part of the summer Dr. Goggin conducted a summer archaeological field session near Gainesville. Excavations were made at the Zetrouer Site, a seventeenth century Spanish-Indian site, probably a mission out-station. No intrusive Seminole burials such as were found in earlier work were discovered. The major part of the site, apparently including building remains, was destroyed in road building but a full artifact sample was obtained in the work. Minor tests were made at Fort Pupa, a late sixteenth and seventeenth century Spanish fort on the St. Johns River. The balance of the summer will be spent in southern Florida, where limited excavations are planned, Dr. Goggin reports.

During the last year the Department of Anthropology at Florida State University has been conducting an archaeological survey of northwest Florida, led by Hale G. Smith. Testing has been done at a Deptford site at Dale Mabry Field, the Lake Marquette Mound village area, Fort San Luis, and the Reywinkle place. Along with this work, fullers earth and clay deposits have been studied in an attempt to discover where and what materials were obtained and used by the Indians.

During the summer of 1950 a field session in archaeology was conducted by Smith at the St. Marks Wildlife Refuge where extensive excavation was done of the cemetery and village area of the site from which came the South Florida Cult materials as described by Goggin (*American Antiquity*, Vol. 12, No. 4, 1947) and Griffin (*American Antiquity*, Vol. 13, No. 2, 1948). A small mound in the Refuge was partially excavated, and testing was also done at Bird Hammock.

Miss Ina Van Stan, Professor of Clothing and Textiles, has started a study of the cord-, fabric- and net-marked pottery of the Southeast. In conjunction with this research, native fibrous plants have been collected and processed and made into cordage.

Future plans include a continuation of the archaeological survey, more excavation at Bird Hammock, and excavation of what are considered key sites in the area. During the summer of 1951 another field session is planned.

Mississippi. William G. Haag of the University of Mississippi carried on a short dig in early summer, working with five students on portions of a rather large village of what is now generally recognized as Early Middle Mississippi. The predominant pottery types are Baytown Plain and Mulberry Creek Cordmarked with its related form, Tishomingo Cordmarked. The site was demonstrably homogeneous with very small, roughly chipped, triangular points throughout. This association of points with these clay-grit types has not been found elsewhere.

Perhaps the most significant find during the early summer was a Poverty Point culture site. During the course of expanding an old railroad right-of-way into a roadbed, two mounds were completely removed by the construction company. Fortunately, Dr. Haag was on hand when a lot of this took place. A deep borrow pit alongside still a third mound revealed a nine and one-half foot accumulation of midden beneath the level of the mound base. The lower four and one-half feet of this midden is Poverty Point material, including thousands of "objects" and some projectile points of the deeply notched style that C. Webb found at the type site. No steatite vessel fragments occur, however. The deposit is overlain by one foot of sterile soil, then three feet of Baytown-Marksville-et cetera, yielding grit-tempered sherds in great abundance. Finally, the top half foot or so is all Neely Ferry Plain, shell-tempered stuff with some pinched and some incised pottery.

In the fall of 1950 the Peabody Museum of Harvard University will continue its Lower Mississippi Survey between Greenville and Vicksburg, Mississippi, with special reference to the correlation of archaeology and channel chronology. The field party will include Mr. and Mrs. Warren B. Eames, under the direction of Dr. Philip Phillips, and will be in the field from October 15th to December 15th approximately. In 1951, from February 1 to about May 1, a joint expedition of the American Museum and the Peabody Museum will excavate a site or sites on the Lower Yazoo River with James A. Ford and Philip Phillips as co-directors.

Louisiana. Robert Fulton, a senior student in the University of New Mexico, is excavating, with advice and assistance from Dr. C. H. Webb, in one of the small hilltop mounds which should be sampled because of their comparative rarity in this area, the lack of any previous controlled investigation, and the differences in location, size and number of mounds (these are always single) from others which occur in the river flood plains and are associated with known pottery cultures of the Gibson and Fulton aspect. Conclusions cannot be drawn as yet, but on the basis of Mr. Fulton's present findings, which include a flexed burial without artifact association and lying on a prepared platform of clay overlying the sub-mound midden, about 150 undecorated sherds (sherd and bone tempered) and five projectile points of the smaller dart type, Dr. Webb's guess is that this is one of the earlier pottery cultures of this area, anteceding Coles Creek and Gibson Aspect cultures. Two of the dart points found in the mound are of the type San Patrice Concave Base, which Dr. Webb described in the 1946 *Bulletin* of the Texas Archaeological and Paleontological Society, conjecturing that they belonged to the late Archaic or Transitional periods in this area.

A conference at Shreveport on "Caddo" material on August 4-6 was scheduled to include Webb, Haag, Jack Cotter of the National Park Service who has been working on the Natchez Trace with headquarters at Tupelo, Miss., Alex Krieger, and Bob Stephenson from Texas, and probably others.

SOUTHWEST

In the Pecos drainage of eastern New Mexico the Texas Technological College field school worked, under Dr. W. C. Holden's general supervision, first at Arrowhead Ruin in Glorieta Pass with Mrs. Jean Quinn in charge, until early July, then for a second six weeks at the Bonnell Ranch site on the Hondo near San Patricio, with Jane Holden in charge. A party of the University of New Mexico field school worked in the region of Capitan during June and July. The beginning group of the University of New Mexico field school excavated under the direction of Carroll Burroughs at Paako State Monument.

In north-central New Mexico the University and the Museum of New Mexico, in cooperation with the National Park Service, conducted work in the area of the lower Chama River valley which is to be flooded by the Chamita Reservoir, with Stanley A. Stubbs of the Museum in general charge of the project and Ralph Luebben as field assistant. Advance salvage excavations were carried on during June and through July at a pueblo dating around 1300 A.D., at which semi-subterranean structures of special interest with unusual features have been investigated. Excavations at a later, larger pueblo began in August.

To the south of the lower Chama, in the Pajarito Plateau, the field school from Adams State College (Alamosa, Colorado), led by F. C. V. Worman, carried on further excavations at the small pueblo in Frijoles Canyon, Bandelier National Monument, which Mr. Worman had worked in preceding seasons.

In performing stabilization work in Chaco Canyon National Monument, R. Gordon Vivian of the National Park Service has recovered additional archaeological data and materials from Pueblo del Arroyo, Bc 51, and Chettro Kettle, and is clearing the triple-walled structure adjoining Pueblo del Arroyo.

J. A. Lancaster of the National Park Service excavated small surface sites on the Mesa Verde during the spring, including two deep kivas with associated structures and a large pit-house.

David de Harport of Peabody Museum (Harvard) is conducting his third season of intensive site-survey in Canyon de Chelly National Monument. Charlie R. Steen of the National Park Service began, late in July, his second season of excavations at Tse-tsa in Canyon de Chelly, a site ranging from Basket Maker III to historic Navajo remains.

At the Petrified Forest National Monument, a Museum of Northern Arizona expedition directed by Fred Wendorf of Harvard University continued excavations at the extensive Basket Maker III site begun last year after completion of work at the earlier site (Adamana pottery) on the Flat-tops. About 25 miles southwest of the Petrified Forest, another Museum of Northern Arizona expedition led by George Ennis tested a Basket Maker III site and a Pueblo III site near Snowflake, Arizona.

E. W. Haury's University of Arizona field school continued excavations at Point of Pines on the San Carlos Apache Reservation in eastern Arizona.

In southwestern New Mexico, Drs. Martin and Rinaldo came again from Chicago to work further in the Pine Lawn district near Reserve, concentrating on dry caves. H. W. Dick of the University of Colorado Museum began another season at Bat Cave, in the Plains of San Agustin, primarily to secure Carbon 14 material from the two deepest cultural levels of this outstandingly significant site.

R. J. Ruppé from Peabody Museum (Harvard) and A. E. Dittert from the University of Arizona are carrying on further investigations on Cebolleta Mesa, southeast of Grants in western New Mexico. Excavations begun in 1949 near Quemado in western New Mexico are being continued by the Peabody Museum Upper Gila Expedition, with Charles R. McGimsey as field director, working in Pueblo I sites as well as later ruins such as the large Pueblo III quadrangle of the Horse Camp Mill site.

At the beginning of August J. L. Nusbaum, Consulting Archaeologist of the Department of Interior, arranged for archaeological checking of the gas-line from northwestern New Mexico to California being constructed across the Navajo Indian Reservation and the Coconino National Forest, with Fred Wendorf as chief of party upon completion of his work in the Petrified Forest, and with Francis Cassidy, William Bullard, Paul Ezell, and Wesley Bliss assisting in survey and excavation.

Excavation of ruins in the vicinity of Prescott, Arizona, was scheduled by G. H. Williamson of the Yavapai County Archaeological Society.

A. H. Schroeder of the National Park Service carried on during the spring additional excavations at the stratified site at Willow Beach, on the Colorado River below Hoover (Boulder) Dam, in advance of flooding by the Davis Dam reservoir, finding a variety of significant remains, mainly of Patayan type, to a considerable depth, supplementing previous work by G. C. Baldwin of the National Park Service.

In southeastern Arizona Charles di Peso of the Amerind Foundation at Dragoon excavated last spring at the historic (Spanish and Sobaipuri Indian) site of Quiburi on the San Pedro River, and planned to resume work there in the fall.

Malcolm Farmer, director of the San Diego Museum, began in early August a definitive survey on behalf of the Navajo Indians of areas formerly owned and occupied by that tribe.

The field meeting of Southwesternists, the 1950 Pecos Conference, was held in Flagstaff at the Museum of Northern Arizona, whose director, Dr. H. S. Colton, invited the group and took care of local arrangements.

MIDDLE AMERICA

Mexican Plateau. Jorge Acosta reopened excavation of the Quetzalcoatl structure at Tula in May, and small-scale excavation in surrounding sites has begun. At Tlatilco, that most amazing site on the outskirts of Mexico City, the Museo Nacional has unearthed many more burials with Middle Culture and Olmecoid furniture, and at nearby Atoto good stratification has been encountered. The same institution, with a grant from the American Philosophical Society, has done reconnaissance work in Morelos, seeking Middle Culture sites to work out connections with the Valley of Mexico, southern Veracruz, and, perhaps, Guerrero. The Museo Nacional has also made a thorough study of modern pottery techniques at Tecomatepec, State of Mexico, which has revealed interesting survivals of pre-hispanic techniques. At Xochicalco excavation has temporarily ceased, but some tidying up is being done by the Instituto Nacional de Antropologia e Historia, and the north ball-court ring is being replaced. In the Tepantla part of Teotihuacan Carlos Margain, for I.N.A.H., continues excavation, and Agustin Villagra is restoring a newly discovered group of murals. Eduardo Noguera's *Horizonte tolteca-chichimeca* is just off the press.

Eastern Mexico. Jose Garcia Payon is starting another season of excavation at Tajin. A reconnaissance of sites in Totonicapan, financed by the Instituto Regional de Veracruz, has produced important ceramic collections, now in Jalapa awaiting study. Tatiana Proskouriakoff visited Tajin and neighboring sites this spring to study design elements of the region. Isabel Kelly has completed her report on the Tajin Totonac.

Oaxaca. Ignacio Bernal, to whom is due the greater part of this information on Mexican activities, has recently published *La ceramica de Monte Alban IIIa*, with much important discussion of ties to Teotihuacan and Kaminaljuyu. Alfonso Caso and he have just completed a lengthy study of Zapotecan funerary urns, in which no less than thirty-two Zapotecan gods are distinguished, but because of its bulk there is serious difficulty in arranging funds for publication.

Mexico, general. Corona Nuñez is making a large-scale reconnaissance of coastal sites of Michoacan. The Instituto Nacional Indigenista, of which Alfonso Caso

is now director, has started large-scale ethnographic work in the Papaloapam basin, and it had been hoped to excavate in parts of the basin before it is flooded (dams), but the familiar drawback of lack of funds set a melancholy halt to that plan, even though probably nowhere in Mexico is there another region of equal strategic importance. The concluding good archaeological news from Mexico is the return of Alfonso Caso to anthropology.

Maya Area, Lowlands. Linton Satterthwaite started the first season of University of Pennsylvania Museum's program of house-mound study in British Honduras at a small site near El Cayo, and spent three weeks at Caracol, a site previously visited hurriedly by Anderson, finding a number of new monuments. One stela has an early (9.8.0.0.0) Initial Series incised at the base of a sculpture of early style. There were located several altars, each with a huge Ahau sign and coefficient carved on it, which appear to represent a new form of katun marker. At Benque Viejo he uncovered about 40% of a magnificent stucco facade in very good shape. This embraces a very fine and interesting mask, astronomical signs, and figures.

Alberto Ruz L. is back at Palenque exploring a stairway under the Temple of the Inscriptions. The previous season's work brought to light a very fine stone tablet, comparable to those of the Sun, Cross, and Foliated Cross, but of somewhat later date. It has a long text with unusual full-figure hieroglyphs forming the Initial Series. The railway from Campeche to Palenque is just about ready to function, and the road from Palenque station to the ruins is now open, so at last that great site is easily accessible.

Carnegie Institution archaeologists and historians had a week of conferences in July to discuss the 1950-55 program of work at Mayapan. As is perhaps known, with the retirement of Alfred V. Kidder at the end of the year, the great program he has guided so successfully for over two decades will come to an end, and a new program calling for work in northern Yucatan on late and historical horizons will come into force. Morris R. Jones, lent by the U. S. Geological Survey, spent nearly eight months at Mayapan, and has completed about three-quarters of the map of the site; he will return in January to finish the job. The map reveals an amazing number of structures, most of which seem to be house groups, within the large walled area. Gus Stromsvik goes to Yucatan in the fall to set up quarters, and work at the site will start in January, but will be on a small scale during the first season.

Frans Blom and Gertrude Duby, with a grant from the Viking Fund, have reconnoitered in the forest region north and northeast of Comitan; they report many caves containing ossuaries with deformed skulls and crude pottery between Comitan and the Jatate River, but note the occurrence of fine pottery with regular burials, particularly in ruins at Banavil, examined by Fred Peterson.

A. V. Kidder, Gordon Ekholm and Gustav Stromsvik spent five weeks visiting by yacht the coast of British Honduras, the Bay Islands, and the north coast of Honduras. Sites were examined on Wild Cane Cay and Frenchman's Cay. At Pomona, in the Stann Creek District, the party saw material from an early tomb which included a huge jade earplug with four glyphs beautifully incised in an early style. The contents of the tomb have been presented to the British Museum by Mr. A. P. Bellhouse, the excavator, at Kidder's suggestion.

Alfredo Barrera Vasquez, Visiting Associate in Linguistics at Tulane, has completed translation of the *Cantares de Dzitbalche*, a collection of sixteen Maya songs of pre-hispanic origin, the manuscript of which was discovered by him in Campeche. The first, dealing with the arrow sacrifice, has already been published in *Tlalocan* (1:273-77).

A. M. Tozzer's many pupils and friends will rejoice to know that he has made an excellent recovery from a recent heart attack, and is now hard at work on the introduction to the report on the cenote of Chichen Itza.

Highlands, Maya and others. Members of Carnegie staff in Guatemala were largely occupied in writing reports preparatory to closure of the present project, but Ed Shook found time to excavate several large pits at Kaminaljuyu which had been used secondarily as dumps for Las Charcas (early Formative) material. These yielded much sherd material, some burned maize and seeds, and a burial. From trenches elsewhere he got Sacatepequez sherd material, thus adding considerably to his unique knowledge of those pre-Miraflores phases. Stephan de Borhegyi, with a grant from the Viking Fund, is organizing the study material in the Guatemala National Museum, and some results of that work will shortly be published.

The Middle American Research Institute, Tulane University, has held a series of staff meetings, with Bob Wauchope presiding, as the first stage in planning a program of coordinated area study in Middle America, with work already initiated on cultural geography and a long-term study of status and personality among the Indians, Ladinos, and north European settlers of the Alta Verapaz. Robert Wauchope has published a short but most important paper—*A tentative sequence of preclassic ceramics in Middle America*—as Number 14 in MARI's Middle American Research Records.

Excavations at Zaculeu having terminated, the site has been turned over by United Fruit Company to the Guatemalan government; a report on the excavations is being prepared by Woodbury, Trik, and Dimick.

Stanley Boggs, for the government of El Salvador, continues work at Tazumal; the excavations are in their tenth season. The immense amount of rebuilding and additional building makes this a most complex dig, but the program is throwing much light on the relations of the Tohil plumbate horizon to the local equivalents of

Maya classic. Boggs also supervised the clearing of the site of Cihuatan which is to be a government monument.

Lower Middle America. A yacht party, referred to with inward envy, spent ten days in the Bay Islands, most of which were devoted to Strong's Eighty-Acre site on Utila Island, where a stratigraphic cut into two meters of fairly rich refuse yielded evidence of ceramic changes, the first stratigraphic testing in the Bay Islands. On Bonacca Island test pits were sunk at Plan Grande site and at Sacrificial Spring. Diligent readers will remember that it was on the way to the latter site that Mitchell-Hedges fought to the death with an enraged iguana, "where the very atmosphere was the breath of a sepulcher." We are glad to report that the yacht party emerged alive, and were able to visit mainland sites in the vicinity of Trujillo.

Doris Stone is finishing *The archaeology of central and southern Honduras,* which will be published by Peabody Museum, Harvard University, and is writing a paper on polychrome Ulua wares. Sam Lothrop's *Archaeology of southern Veraguas, Panama* has just been published by the same institution; it is of outstanding importance. We are sorry to report that at the time of writing Lothrop is in a hospital in Cambridge, following a heart attack; his friends and, indeed, all interested in Latin American archaeology wish him a speedy recovery.

SOUTH AMERICA

Chile. The field party of the Museo Nacional de Historia Natural in Santiago and the Instituto Geográfico of the University of Chile, headed by Dr. Greta Mostny of the Museum, which conducted an ethnographic survey of the area around the town of Peine, in the Desert of Atacama, province of Antofagasta, in December, 1949 (*American Anthropologist,* Vol. 52, No. 2, April-June, 1950, p. 296), concurrently examined archaeological remains in the vicinity. Near the present village of Peine are the ruins of the pre-conquest one, consisting of one and two room houses built of field stones with some dressed stone in the corners and door jambs. The same type of construction is found in the modern village. There is a prehistoric cemetery near the ruins from which some skulls were obtained. Measurements on these skulls do not coincide with measurements made on living individuals. Dr. Mostny reports that the material culture of the modern village is impoverished by comparison with the archaeological material; pottery and basket making have disappeared altogether. In weaving and cordage, however, prehistoric techniques are still practiced.

Peru. Dr. Wendell C. Bennett of Yale University left for Peru at the end of May, 1950, to spend the summer making a survey of the Mantaro Basin in the Central Highlands of Peru, with some excavation at the great ruined city of Huari, near Ayacucho, an important center of the Tiahuanaco horizon.

Prof. Richard P. Schaedel of the National University of Trujillo contributes the following information regarding archaeological activities in northern Peru:

M. and Mme. Henry Reichlen of the Musée de l'Homme, Paris, have completed their excavations in the Cajamarca and Chachapoyas areas and are now in Lima writing up their material. An excellent preliminary report on the work around Cajamarca has already appeared (*Journal de la Société des Américanistes,* n. s., vol. 38); it describes the complete pottery sequence of the area from Chavin horizon to Inca. Mme. Reichlen (Paule Barret) is writing up a considerable collection of cranial and skeletal material from the North Highlands, in collaboration with Dr. M. Kuczynski-Godard of Lima. This collection is relevant to the problem of the antiquity of syphilis and tuberculosis in Peru.

Prof. Schaedel himself has received a grant from the Colt Archaeological Institute to carry out a study of Peruvian North Coast architecture in the area between the Casma and Leche valleys. The Institute of Anthropology of the University of Trujillo is also participating in this project which was begun in 1949 and will be finished in August, 1950.

The Institute of Anthropology, of which Prof. Schaedel is director, is also engaged in a program of excavations in the Trujillo area. Several interior rooms and the upper platform of the Huaca "El Dragón" were cleared recently and then work was shifted to a neighboring huaca which has been named "Tacaynamo." The finds here are similar to those at El Dragón. Both sites contain painted low-relief friezes and wooden statues; about fifty of the statues have been recovered from the two sites. Between November, 1949, and January, 1950, the Institute excavated eighteen burials and two tombs in the section between the Bandelier and Gran Chimu groups at Chanchan (Chimor). This work yielded a large collection of pottery and metal work of the Late Chimu period.

Sr. José Eulogio Garrido, recently appointed director of the Museum at the University of Trujillo, made a reconnaissance trip to the Julcán region near Santiago de Chuco and brought back an important collection of stone sculpture and textiles. This highland textile collection, together with the pieces found by Sr. Antonio Rodríguez Suy Suy in the Chiminagas caves near Santiago de Chuco, will form an excellent basis for a study of highland weaving. Wooden sculpture of the North Highlands has also been found in good condition in the region of Mollepata.

Sr. Oscar Lustenau, an amateur archaeologist of Guadelupe, is working on an archaeological map of the Jequetepeque valley which will be accompanied by a description of the surface sherds and sketches of the architecture. He recently spent two weeks making plans of the structures at Pacatnamú (La Barranca).

Mr. Ross T. Christensen is in Peru on a fellowship from the Peruvian government and is working with the Trujillo Institute. In June, 1950, he made a reconnaissance trip to Piura and Tumbes and the Province of El

Oro in Ecuador. He reports the following results: "On the Peruvian side the outstanding sites were the large pyramid mound of Narigualá, near Catacaos, near Piura, and the ruins of the original Tumbes, the Tumbes that Pizarro conquered, called Huaca del Sol de los Incas. From the pottery, Narigualá seems to date back at least to the Middle Periods, while the Huaca del Sol de los Incas is certainly much older than the Inca occupation.

"The picture in the vicinity of Machala, Ecuador, is much different. While there are a number of tolas, or prehistoric mounds, they do not seem to be pyramid mounds at all, but rather burial mounds.

"I believe I should mention, too, the excellent work of Dr. Georg Petersen, a geologist working for the Empresa Petrolera Fiscal of the Peruvian government. For at least ten years he has done amateur research of excellent quality in the prehistory and Conquest history of the far north coast of Peru." Dr. Petersen has completed a lengthy monograph on his archaeological survey work which he is now arranging to have published. It will cover more than a hundred sites north of the Chira river valley to the Ecuadorian border, including some sites in the upper Chira valley above Sullana but few south of this valley. He has mapped and plane-tabled a great number of the sites, and has done some digging, though mostly of an exploratory nature, and has set up a chronology for the prehistory of the region.

Prof. Jorge C. Muelle of the Instituto de Estudios Etnológicos, Lima, has been doing archaeological survey work in Cañete valley in connection with an ethnographic study of Lunahuana.

Venezuela. Prof. José M. Cruxent, director of the Museo de Ciencias Naturales of Carácas, reports the following archaeological activities in Venezuela:

The major archaeological project now in progress is a program of excavation initiated by Prof. Cruxent and Dr. Irving Rouse of Yale University in July, 1950. The plan calls for work at three sites on the peninsula of Araya-Manicuare, one in Lara, and several on the Lower Orinoco. The Araya-Manicuare sites look particularly promising from a chronological point of view; one is a shell heap with no pottery, one contains painted pottery and pieces with several feet, and the third is a contact site.

On the Island of Cubagua, an archaeological party of the Universidad Central and the Instituto Pedagógico has located the site of the Colonial city of Nueva Cadiz.

In January, 1950, a field party of the Sociedad de Ciencias Naturales La Salle made an ethnographic collection among the Motilones of the Sierra de Perijá and collected some skeletal material from caves in the area. Some of the bones are modern, others may be ancient.

Sr. Alfredo Boulton of the Museo de Ciencias Naturales explored a cave site on the Rio Parguaza, Guayana. The walls of this cave were covered with rock paintings and some archaeological specimens were collected from the floor.

Dr. Eduardo Fleury Coello and Dr. Hans Tanner undertook a field trip to Venezuelan Guajira in April. They made an archaeological collection in the Cojoro area and visited a number of caves with rock paintings on the walls.

About the same time, Prof. Cruxent and Dr. León Croizat made an archaeological survey in the Llanos area south of the Valley of Pascua. They found a number of new sites and visited the Middle Orinoco sites excavated by Osgood and Howard in 1941.

1950 ANNUAL MEETING AMERICAN ANTHROPOLOGICAL ASSOCIATION

Univ. of Calif., Berkeley, Dec. 28-30, inclusive

Morning sessions of the meeting will be devoted to invited papers; afternoon programs will consist of volunteered papers. The number of parallel afternoon sessions will be determined by the number and character of papers received.

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NOTE

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NOTE

The American Association for the Advancement of Science meets in Cleveland, Dec. 26-30, 1950. Reservations may be secured through Mrs. L. D. Perkins, Housing Bureau, Cleveland Convention and Visitors Bureau, Inc., 511 Terminal Tower, Cleveland 13, Ohio.

ERRATA

I should like to correct an error in my recent book, "Early Man in the New World," which may have caused some embarrassment to H. M. Wormington of the Denver Museum of Natural History. At her suggestion I obtained from W. F. Libby a date determined by a carbon 14 test for a tree burned by Mt. Mazama pumice, and from L. S. Cressman his permission to publish this information. I reached Libby and Cressman only on the last night before I had to return page proof to the publishers, and, between pressure of time and a feverish cold, I blunderingly failed to change the reference from Wormington as personal informant to Cressman and Libby. — KENNETH MACGOWAN.

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TABLE OF CONTENTS

PAGE

Cultural Unity and Disunity in the Titicaca Basin . . . . . WENDELL C. BENNETT 89

Test Excavations at the Lake Jackson Site . . . . JOHN W. GRIFFIN 99

An Archaeological Survey of the Benham Falls Reservoir, Oregon . . . . . DOUGLAS OSBORNE 112

Reconnaissance Notes on the Site of Huari, Near Ayacucho, Peru . . . . . JOHN H. ROWE, DONALD COLLIER, AND GORDON R. WILLEY 120

Preliminary Report on the Excavation of an Etowah Valley Site . . . . . WILLIAM H. SEARS 137

A Preliminary Segregation of Etowah, Savannah, and Lamar . . . . . CHARLES H. FAIRBANKS 142

Culture Chronology in Texas . . . . . ROBERT L. STEPHENSON 151

FACTS AND COMMENTS

An Implement of Elephant Bone from Manitoba . DOUGLAS LEECHMAN 157

Metalworking Tools from the Central Coast of Peru . . S. K. LOTHROP 160

Shell Object from Manitoba . . . . . CHRIS VICKERS 164

An Oblique Parallel Flaked Point from Missouri . . . J. M. SHIPPEE 164

Comments on South American Archaic Relations . . . DAVID A. BAERREIS 165

The Katun Calendar of the Book of Tizimin . . MAUD W. MAKEMSON 166

BOOK REVIEWS

WHITE: The Science of Culture . . . . . Haag 169

BENNETT AND BIRD: Andean Culture History . . . . . Rowe 170

GLADWIN: Excavations at Snaketown IV — Reviews and Conclusions . . . . . Woodward 172

GRIFFIN: The Florida Indian and His Neighbors . . . . . Sears 174

GOETZ AND MORLEY: Popol Vuh, the Sacred Book of the Ancient Quiche Maya . . . . . Thompson 175

ANNUAL MEETING OF THE SOCIETY FOR AMERICAN ARCHAEOLOGY, 1950 . . 176

NOTES AND NEWS 181

AMERICAN ANTIQUITY IS INDEXED IN THE INTERNATIONAL INDEX

UNIVERSITY OF UTAH PRESS, SALT LAKE CITY, UTAH